THE

physical therapy

REVIEW

Volume 32 - Number 3 March 1952

Rehabilitation for Hemiplegics in the Home — RUDOLPH

Physical Therapy in Medical Diseases of the Chest — MAY

Causes and Corrections of Deviations in Gait by the Above-Knee Amputee — SELIGMAN

Conference 1952 — Page 136

PUBLISHED MONTHLY BY
THE AMERICAN PHYSICAL THERAPY ASSOCIATION

HERE'S ONE MORE *Microtherm* ADVANTAGE

FOR YOU TO CONSIDER BEFORE THE 1952 DIATHERMY CHANGEOVER

THE NEW DIRECTOR "D" FOR TREATMENT OF LARGE AREAS
and for use only with
RAYTHEON RADAR MICROWAVE DIATHERMY

Raytheon Radar "MICROTHERM" merits thorough investigation on your part before expiration of the F. C. C. grace period and the changes in diathermy equipment it may involve. Compare "MICROTHERM" with any other diathermy equipment:

— **for ease and speed of application** the new Director "D" — available as an accessory at slight extra cost — now provides a complete range of controlled application over any desired area

— **for high clinical efficiency** — penetrating energy for deep heating — desirable temperature ratio between fat and vascular tissue — effective production of active hyperemia — desirable relationship between cutaneous and muscle temperature

— **for patient's comfort and safety** — no electrodes — no pads — no shocks or arcs — no contact between patient and directors

— **FOR AVOIDING TELEVISION INTERFERENCE.** The new and highest television channel gives up to 920 megacycles. Raytheon Radar "MICROTHERM" operates at 2450 megacycles, far, far above the television wave range.

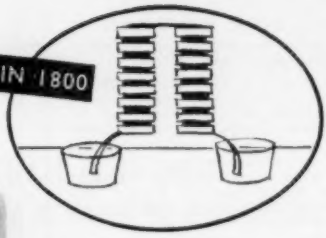
APPROVED BY THE F. C. C., CERTIFICATE NO. D-477
UNDERWRITERS' LABORATORIES

RAYTHEON

Excellence in Electronics

RAYTHEON MANUFACTURING COMPANY · POWER TUBE DIVISION · WALTHAM 54, MASS.

VOLTA'S BATTERIES IN 1800



a far cry
from the
Burdick
MS-2

MUSCLE STIMULATOR

Smooth faradic and galvanic currents—
—to restore muscle function
—to maintain muscle tone and volume
—for iontophoresis and electrolysis
—to repair injured tissue

THE BURDICK MS-2 OFFERS

simple control
fine current gradation
wide selection of intensity
absolute minimum of discomfort

THE BURDICK CORPORATION
MILTON, WISCONSIN

Georgia Warm Springs Foundation

GRADUATE COURSE

Physical Therapy and Occupational Therapy in the Care of Poliomyelitis

This course is open to graduates of approved schools in physical therapy and occupational therapy. Such graduates must be members of the American Physical Therapy Association and/or the American Registry of Physical Therapists and Occupational Therapy Association.

Tuition: None. For Scholarship to Cover Transportation and Maintenance, Contact: National Foundation for Infantile Paralysis, 120 Broadway, New York 5, New York.

Entrance Dates: First Monday in January, April, July and October.

Duration of Course: The Course is divided into two parts:

Part I. Over-all care of convalescent polio with particular emphasis and special training in muscle testing and muscle reeducation.

Part II. Particular emphasis and special training in functional testing and functional retraining.

Each Part lasts three months and only selected students who have completed Part I will be admitted to Part II. All students applying for Part I must be willing to remain through Part II if selected.

For Information Write:

Robert L. Bennett, M.D.
Georgia Warm Springs Foundation
Warm Springs, Georgia

THE KABAT-KAISER INSTITUTE
At Vallejo, California

Announces

THREE MONTHS' POSTGRADUATE COURSES FOR PHYSICAL THERAPISTS IN TECHNICS OF NEUROMUSCULAR REEDUCATION

Physical therapists must be members of the American Physical Therapy Association, members of the American Registry of Physical Therapists, or qualified foreign physical therapists.

Courses start October 1st, January 1st, April 1st, and July 1st

Number of students accepted is limited. Certificate given upon successful completion of the course.

TUITION: $150

Applicants should communicate with:

Margaret Knott, Chief Physical Therapist
Kabat-Kaiser Institute
Vallejo, California

THE physical therapy REVIEW

THE OFFICIAL MONTHLY PUBLICATION OF THE AMERICAN PHYSICAL THERAPY ASSOCIATION

Features articles by physicians, scientists, educators, and physical therapists relating to treatment procedures, developments in the field, research reports, news of the profession, abstracts of current articles, and reviews of new books relating to physical therapy.

Domestic $6.00 per year

Foreign $6.75 per year

1790 Broadway **New York 19, N. Y.**

OFFICIAL INSIGNIA—THE AMERICAN PHYSICAL THERAPY ASSOCIATION

***The* PIN (Actual Size)**

The official pin of the Association is made of 1/10 of 10 karat gold-fill with blue enamel outline. Price,

$4.50

Including Federal tax and mailing charge. (Subject to change without notice.)

***The* EMBLEM**

(Exactly the same—but four times as large as the pin.)

Distinctive in its colors of gold and royal blue on white cloth. Each

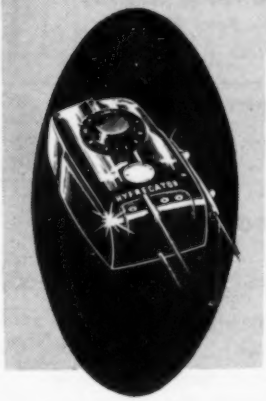
25c

May be secured from

AMERICAN PHYSICAL THERAPY ASSOCIATION

1790 Broadway, Room 1316A
New York 19, N. Y.

The BIRTCHER Hyfrecator



TRUTH IS SO POTENT...
WHY RESORT TO ANYTHING LESS?

Since 1939, when the Birtcher Hyfrecator was first introduced to the Medical Profession, over 70,000 doctors have purchased the device. A great number of unsolicited testimonials have been received praising its broad usefulness, its convenience and its simplicity.

Such widespread acceptance and approval make a convincing demonstration of the proven worth of the Hyfrecator in practically every type of practise. If you do not own one, now is the time to investigate how a Hyfrecator may be of value in your office. It is inexpensive; it is probably the best dollar value one can find today. Complete descriptive literature of the instrument and its uses is yours for the asking.

Send for free literature

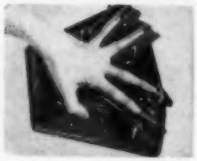
Name_____

Address_____

City_____ Zone____ State_____

THE BIRTCHER CORPORATION
5087 Huntington Drive
Los Angeles 32, Calif.

UNDERWOOD MANUFLEX



For
HAND
FINGER
WRIST
THERAPY

Accepted by Council on Physical Medicine & Rehabilitation. *Hundreds are now in rehabilitation service.*

Typical Manuflex Installations:

Institute for Crippled and Disabled, New York City
Morris Memorial Hospital for Crippled Children
Lenox Hill Hospital, New York City
Health Dept., Merck & Co., Mfg. Chemists

No single picture conveys the ingenuity of the Manuflex. Send for free "action" pictures and other brochures.

The Manuflex prepaid $20.00. Money unconditionally refunded after 5 days' trial if not satisfied.

MANUFLEX OWNERS: Send for description of inexpensive new "Gym Kyl" to use with your machine. Comprehensive, active exercises on apparatus designed to interest both children and adults.

MANUFLEX CO.

Dept. A, 2130 N. E. Klickitat • Portland, Oregon

---

acme skis *Pat. Pending*

RECIPROCAL MOTION
FOR CHILDREN AND ADULTS
THREE SIZES

Walking aid..... Balance Training
Reciprocal motion of arms and legs in walking pattern.

For Further Information Write:

acme skis *Sole Distributors*
2805 S Fairfax Ave. Los Angeles 16, Calif.

THE physical therapy REVIEW

112 Vol. 32, No. 3

published monthly by the
American Physical Therapy Association
at 1790 Broadway, Room 1315
New York 19, N. Y.

Editor: E. JANE CARLIN

Associate Editors: DANIEL R. BARTHOLOMEW, MARY E. CALLAHAN, LOUISE REINECKE

Managing Editor: CAROL VANCE

Assistant Business Manager: SHIRLEE STERN

Membership in the American Physical Therapy Association is $15.00 a year, including a subscription to THE PHYSICAL THERAPY REVIEW. Subscriptions for nonmembers to THE PHYSICAL THERAPY REVIEW, $6.00 a year; $6.75 in Canada and foreign countries. Single copies 75 cents. (50 cents to members.) Reentered as second class matter August 11, 1949, at the post office at New York, N. Y., under the act of August 24, 1912.

The statements in the manuscripts published in THE PHYSICAL THERAPY REVIEW are made solely on the responsibility of the author. The American Physical Therapy Association does not assume any responsibility for statements contained therein. Manuscripts accepted for publication in THE PHYSICAL THERAPY REVIEW are for exclusive publication and may not be published elsewhere without permission.

Officers

President	Mary Clyde Singleton
Vice-president	Harriet S. Lee
Secretary	Marian Williams
Treasurer	Margaret Kohli
Speaker, House of Delegates	Mary E. Nesbitt

Directors

LOUISE A. BAILEY	Chicago, Ill.
MARGUERITE I. IRVINE	Seattle, Wash.
MARGARET A. KOHLI	Madison, Wis.
SUSAN G. ROEN	Los Angeles, Calif.

Advisory Council

DONALD COVALT, M.D.	New York, N. Y.
EMIL D. W. HAUSER, M.D.	Chicago, Ill.
HUGO V. HULLERMAN, M.D.	New York, N. Y.
CHARLES O. BECHTOL, M.D.	Oakland, Calif.
AURA SEVERINGHAUS, PH.D.	New York, N. Y.

Standing Committees

Education—
FLORENCE S. LINDUFF — Washington, D. C.
Exhibits—
MIRIAM L. RODENBERGER — East St. Louis, Ill.
Interprofessional Relations—
MRS. ANNETTA VINCENT — Fort Lupton, Colo.
Nominations—JESSIE STEVENSON, Nashville, Tenn.
Program—MARIAN WILLIAMS, Palo Alto, Calif.
Publication—E. JANE CARLIN — Jenkintown, Pa.
Public Laws—
VIRGINIA GREENWOOD — Boston, Mass.
Public Relations—
DOROTHY E. VOSS — Washington, D. C.

National Office Staff

Executive Director	Mildred Elson
Assistant Executive Director	Mary E. Haskell
Educational Consultant	Margaret Moore
Poliomyelitis Consultants	Lucy Blair, Ruth Whittemore

Table of Contents:

Rehabilitation for Hemiplegics in the Home—Herman L. Rudolph, M.D. 113

Physical Therapy in Medical Diseases of the Chest—Evelyn A. May 121

Causes and Corrections of Deviations in Gait by the Above-Knee Amputee—Alice Seligman 126

Editorials 132

Association Activities 134

Conference 1952 136

Membership News 140

General News 141

Meet Our New Contributors 142

Index to Current Literature 143

Reprints Available 144

Abstracts 146

Book Reviews 152

List of Approved Schools 154

Available in a Microfilm Edition.

The Physical Therapy Review

Official Publication of The American Physical Therapy Association

Volume 32 **March 1952** **Number 3**

Rehabilitation for Hemiplegics in the Home

Herman L. Rudolph, M.D.

The management of hemiplegia in recent years has been supplemented with a dynamic approach which has been wholeheartedly embraced by all physicians faced with this very common problem. Covalt presents an amazing estimate of 1,250,000 hemiplegics in the United States; present trends in longevity may be expected to enlarge this number still further. The family physician is paying increased attention to geriatric care and has displayed great interest in discussions of experiences in rehabilitation technics. Most discussions have stemmed from experiences accumulated in the larger rehabilitation centers and institutions to which the vast majority of physicians and patients still have no access at present; nor is there reason to believe that facilities and personnel to handle *all* hemiplegics will ever be available to administer the elaborate programs more frequently described. It appears reasonable then to emphasize that most hemiplegics can be treated successfully at home. The following case record may serve as an introductory illustration:

W.R., a 38 year old white male, was admitted to the hospital September 6, 1950, complaining of squeezing pain of five days duration in the sternum, radiating to the neck and shoulders. Cardiac study revealed an acute myocardial septal infarction and the usual measures including anticoagulants were instituted. Convalescence progressed satisfactorily until the morning of September 24, 1950, when the patient suddenly presented an unusual degree of lethargy and restlessness. A suspected cerebral embolus was confirmed on neurological consultation and a total right hemiplegia with aphasia, apraxia and agnosia was noted. Stellate ganglion blocks were instituted immediately and repeated twice without benefit. The neurological consultant concurred in the plan of treatment.

The Department of Physical Medicine was consulted September 27, 1950, at which time proper postural alignment was instituted with the use of a bedboard, footboard, sandbag, shoulder abduction pillow, hand roll, and a trapeze. Two weeks later, which was then five weeks postinfarct, a program of rehabilitation was formulated to include daily passive motion and reeducation of the involved extremities. The patient was permitted out of bed and allowed on a chair October 20, 1950. On November 11, 1950, he was transferred to his home by ambulance. At this time muscular function had recovered to a fair degree in the right hip and knee, and to a poor degree in the shoulder. The patient was able to stand, but only with a great deal of assistance. Except for the fact that he could repeat only an occasional word, the patient was still completely aphasic.

At home the program of rehabilitation was continued as in the hospital, with proper postural alignment and an ordinary single bed was advised in lieu of a hospital bed. A physical therapist from our office was assigned to visit the patient twice weekly and to teach the nurse in attendance the fundamentals of the exercise and retraining program.

The family desired additional treatment of the patient and on November 26, 1950, two weeks after hospital discharge, he was referred by his family physician for admission to a rehabilitation center well equipped to handle this difficult problem. On December 24, 1950, the patient was discharged with the notation that "he was not happy away from home" and that "even with a long leg brace on the affected extremity, it was still questionable whether independent ambulation would be possible."

Instructor in Physical Medicine, Jefferson Medical College, Philadelphia, Pa. Chief of Department of Physical Medicine, St. Joseph's Hospital, Reading, Pa. Chief of Department of Physical Medicine, Community General Hospital, Reading, Pa.

An intensive program of rehabilitation at home was reinstituted December 27, 1950, with semiweekly visits by a physical therapist who treated and supervised the daily treatments given by a capable full time nurse. A long leg brace with pelvic band, to be described shortly, was ordered at once and applied January 12, 1951, at which time training in ambulation was instituted in a home-made set of parallel bars. Speech therapy was also instituted and was supervised by a qualified speech therapist of the school administration. On January 27, 1951, sufficient hip control had been regained to warrant use of a cane and removal of the pelvic band. February 10, 1951, stabilization of the knee was sufficient to suggest removal of the thigh piece and knee lock. Training in stair climbing was then started, and on February 15, 1951, the patient was able to come to our office for treatment by taxi, and with very little help from his nurse. At that time the patient was almost wholly independent, being able to dress himself, handle his brace alone, take care of all toilet needs, etc. As of April 25, 1951, the patient has been visiting his place of business for the past six weeks where he delights in checking the cash register. Speech has recovered sufficiently to permit perfect repetition of all words; however, spontaneous conversational speech is still impossible, except for a limited number of words and the use of recognizable facial expressions and hand signs.

Since a program of rehabilitation at home is practicable, it appears that special attention to this aspect in the management of hemiplegia can eliminate hospitalization or at least reduce the time spent in hospitals. Also, it can serve to indicate to our students and practitioners that technics in rehabilitation can be learned without extensive preparation, and need not be too elaborate or expensive. First and foremost, a home program requires proper orientation of the patient and his family. We do this by distributing a printed sheet which lists in detail the aims and goal, necessary equipment, types of exercises, cost of equipment and treatment. A frank and thorough discussion serves to curb excessive enthusiam, demonstrates the necessity for a progressive and graduated activity program, and mitigates anxieties so often engendered by well meaning but misguided relatives and friends.

Proper postural alignment can be started at once in all hemiplegics regardless of the pathology, and has been described adequately and repeatedly. An ordinary bed cannot be replaced by a hospital bed because getting out of bed is best accomplished when the feet can be placed firmly on the floor while sitting on the edge of the bed. A bed board beneath the mattress prevents sag whether the patient is lying flat or sitting on the edge of the bed. A shoulder abduction pillow between chest and arm, placing the shoulder in about 45° abduction and 15° external rotation, assists in preventing the frequently observed painful and stiff arthropathics. A footboard, preferably a box, can serve to prevent a tight heel cord and foot drop. Plaster splints have been recommended, but these do not lend themselves well to home construction and use, nor do we feel that total immobilization is conducive to proprioceptive stimulation. A heavy cloth bag, shaped like a large bologna, filled with sand or yard dirt, placed on the outer side of the foot and leg will prevent tibial torsion and external rotation of the lower extremity. A hand roll made by rolling a pair of men's socks or stuffing a piece of stockinette with cotton, and equipped with snug tape top and bottom for insertion of thumb and fingers, can serve to maintain functional position of the hand. A cock-up splint for the hand has the same disadvantage as the plaster splint for the leg. A five cent pulley fastened to the head end of the bed on the side of the involved arm, and supplied with a length of washline, will afford passive exercise of the involved extremity, with the good hand applying traction. Customarily we prefer to recommend passive motion of the involved extremity by the patient who can be taught to use his good hand. This serves the additional purpose of maintaining strength in the good arm. A knotted rope fastened to the foot end of the bed either as a single strand or in the form of a rein has been recommended for reconditioning flexors of the trunk and to permit the patient to get into a sitting position. Much more satisfactory in our experience is a 1" pipe trapeze as depicted on Fig. 1. A mimeographed diagram presented to the family handy man or the neighborhood plumber produces within short order an invaluable aid costing $15 at the most for labor and materials. The hemiplegic patient appreciates stability. The pipe trapeze serves admirably when the top bar is used for sitting up and the side bar for getting to the edge of the bed and standing. Attention is invited to the fact that the hemiplegic will do better when getting out of bed if he gets in and out on the side of the good leg. The involved leg drags along easily when the patient gets out of bed. When he gets into bed he can hook the foot of the good side under the heel of the involved leg and lift it onto the bed.

Ideally an evaluation of this disability is in order, with a muscle test, range of joint motion, and a functional evaluation. For a practitioner with the time or with capable physical therapists a more exact determination of the extent of disability and a comparative report for progress can be had. It is to be noted, however, that in the final analysis the best evaluation of the feasibility of rehabilitation is a therapeutic trial.

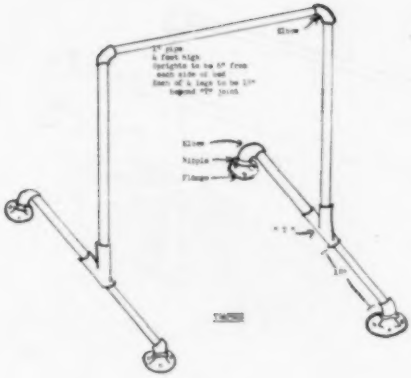


Figure 1.

Heat in the form of electric pads, hot water bottles, hot packs and bulb lamps may prove of value in alleviating the joint pain and muscle spasticity in the neglected hemiplegics. Massage may be of value in the presence of edema and flaccidity. We have had occasion to use these modalities only in rare instances. Electrical stimulation has been recommended but has been of no value in our practice and only takes up time which can be spent better in mobilization. Electrical gimmicks are the stock-in-trade of the cultists and whenever consultation for a hemiplegic is requested, if he has had repeated sessions of "electrical treatment," we can expect and usually find a severe degree of spasticity and deformity.

Movement by exercise is the prime factor in a rehabilitation program for all hemiplegics. In the totally paralyzed extremity passive motion is essential to prevent painful contractures and deformities. Active exercises can be prescribed in accordance with strength of the fundamental movements of a joint. Experience has demonstrated that cooperation with an exercise program is inversely proportional to the number of exercises and their complexity. It has been an interesting observation that physicians never forget the fundamental motions of joints, viz., flexion, extension, abduction, adduction, etc., and that the average layman, when confronted with the job of assisting in an exercise program, very quickly learns the various ranges of joint motions. "Bending" the elbow is just as intelligible to the layman as "flexing" it is to the physician or physical therapist. The fact remains that simple exercises can be learned and conducted very satisfactorily by an interested and solicitous wife or husband, son or daughter, other relative, nurse or friend, as the case may be. The following list of extremely simple exercises is contained in our instruction sheet distributed to all hemiplegics:

Arm Exercises

1. Raise arm forward to head of bed.
2. Raise arm sidewards to head of bed.
3. Press arm downwards on bed.
4. Place bent elbow on level with shoulder. Roll arm so that back of hand touches bed. Roll back so that palm touches bed.
5. Bend elbow. Straighten elbow.
6. Arm at side, roll wrist out, roll it in.
7. Palm on bed, raise hand.
8. Back of hand on bed, raise hand.
9. Make a fist, straighten fingers.
10. Fingers straight, separate them and bring them together.
11. Touch thumb to all fingertips.

Leg Exercises

1. Bend hip, raising knee onto abdomen.
2. Legs together, take leg out sidewards and bring it back.
3. Raise straight leg in air.
4. Slide heel on bed, bending knee.
5. Bend foot up, down, in, out and around.
6. Curl toes, and straighten.
7. Turn on abdomen. Raise straight leg.
8. Bend knee.

The services of a capable physical therapist when available should be utilized for a demonstration of technics in the application of heat, massage and exercise. The physical therapist can assist with special technics in muscle reeducation and practical application of our knowledge of mass confusion reflexes, tonic neck reflexes, coordination exercises, reciprocation, relaxation, maneuvers for the release of particular spasticities, etc.

Just as soon as the condition warrants, practice in balance should be instituted first by having the patient sit on the edge of the bed and gradually come to a standing position. Once the patient is out of bed, the family is advised to dress him fully with particular emphasis on shoes rather than slippers. The occasional dependent edema can be controlled without difficulty with an elastic bandage. Training in balance and gait starting between chairs or in a walker has proved in our experience too risky for the unsteady hemiplegic; we do not recommend them for general use. A simple, inexpensive, easily constructed set of 1" pipe parallel bars is presented in Fig. 2. A mimeographed plan

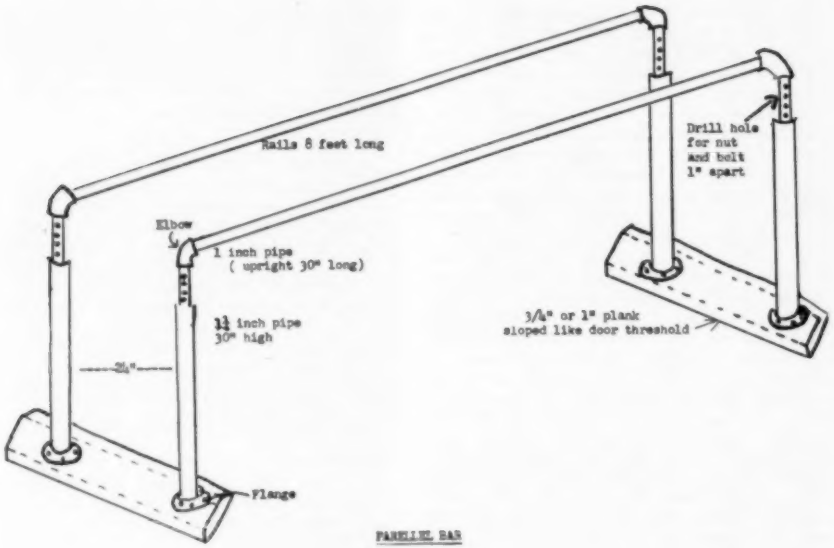

Rails 8 feet long
Drill hole for nut and bolt 1" apart
Elbow
1 inch pipe (upright 30" long)
1½ inch pipe 30" high
3/4" or 1" plank sloped like door threshold
Flange
PARALLEL BAR

Figure 2.

likewise presents no problem for the family handy man or neighborhood plumber. Bars constructed according to plan present no problem of space in the average bedroom as they can be folded easily against the wall for storage, and permit simple dismantling for shifting to any room upstairs or down. Five minutes of practice walking in the bars every hour on the hour is our recommended procedure.

Not infrequently a rotating hip, a buckling knee, and a flail or dropped ankle will require a brace. There comes a time in the progress of most patients when the musculature of the hip and knee can stabilize the extremity sufficiently to require only a lower leg brace to support the ankle. This may require several weeks or months during which time the patient is mostly recumbent awaiting the increased strength of the hip and knee. It has been our practice to supply a hemiplegic at the earliest possible moment with a long leg brace and pelvic band, Fig. 3. More often than not this is done within the first month. The status of the involved leg is ignored completely provided the patient is able to stand on the good leg and can support himself in the standing position with the good arm and hand. It is our impression that the standing position with a very weak but well braced leg elicits a bombardment of proprioceptive impulses, which must be the determining factor in producing rapid strengthening of muscles (as occurred in the case described). It must be remembered that the hemiplegic has one good hand only and since the goal in rehabilitation is independence, the brace should be constructed to afford ease of handling. Leather cuffs and *both* shoes can be provided with overshoe buckles which can be snapped into position with one hand with a surprising degree of ease, Fig. 4. A double lock has been recommended at the knee to prevent torsion of the brace, but if these are of the slip ring type a hemiplegic might never be able to unlock both rings simultaneously to bend the brace at the knee. A single lock has never been a cause of trouble to our patients for whom we supply an inside ring lock with a spring snap and a handle release reaching several inches up the inside of the thigh as pictured in Fig. 4. The unlocking mechanism should be placed on the inside of the thigh and

Figure 3. (Below) Long leg brace with pelvic band. Note location of screw bolts, the removal of which permit separation of the several sections.

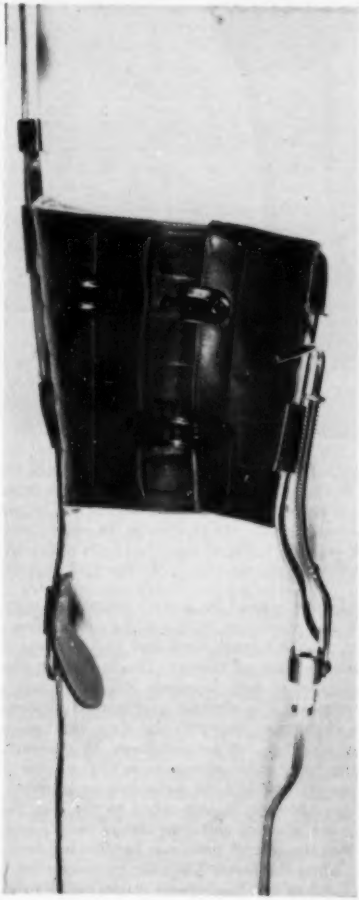


Figure 4. (Above) Thigh piece and knee lock. Overshoe buckles permit operation with one hand. An inside ring lock with an extended release handle permits simple control by the good hand.

Figure 5. Lower section of brace. Removable bars at the stirrup ankle joint permit simplified placement of shoe. Note buckles on both shoes. The drop foot spring mechanism should be placed on the inner side of the brace to permit ease of operation with the good hand.

the handle should be placed sufficiently high so that the patient can, with a slight reach, break the knee with his good hand and sit down all in a smooth pattern of motion. The flail ankle should be stopped in both directions with only about 10° of motion. The difficult problem of slipping a flail or spastic foot into the shoe attached to a long leg brace can be eliminated by constructing a detachable ankle stirrup as in Fig. 5. The shoe is put on first and the brace can be snapped on easily. Attention is also called to the fact that a long leg brace of this type should be constructed so that the several parts can be detached without mutilating the brace. The time to remove the pelvic band or the thigh piece might be determined beforehand, but a simple estimate is a trial removal; if a joint still has insufficient stability, the section can be replaced at once. A strongly inverted ankle may require the addition of an outer T strap. Occasionally the ankle may recover sufficiently to require only the use of a buttress heel to prevent ankle turning.

It is common experience to find a patient with any disability of gait in a wheel chair. This can be secured with both wheel drives on one side so that it can be operated by a hemiplegic with only the good hand. A wheel chair in the home does not lend itself for general recommendation as it is not entirely free of problems in handling and may serve to retard training in ambulation. Where it is absolutely essential this apparatus can be obtained from most surgical supply houses for a nominal monthly rental fee.

Once a hemiplegic has reached the point of ambulation with a crutch or cane, he is ready for training in stair climbing which must be learned to reduce the burden of care and assistance by others. He quickly learns to step down with the involved leg and up with the good leg. Stairs equipped with double rails, permitting use of the good hand when travelling either up or down, are ideal for retraining. We have never encountered a double-rail stair in any home, and rather than burden the family with installation of an additional rail, training in stair climbing can be successfully accomplished regardless of the single rail or its location. A patient going up or down the stairs with a rail on the good side has no

trouble stepping up with the good leg or down with the involved leg facing forward. When going down a stair with the rail on the involved side, a patient can negotiate stepping down more easily by stepping down backwards. Coming up the stairs with a rail on the involved side presents the greatest problem but this too can be negotiated without too much difficulty by facing forward, but turned halfway toward the rail, stepping up with good leg, and reaching across the body with the good hand for good support on the rail. The cane must be carried by hanging from the chest coat pocket or from the fly of the shirt. By this time the patient has gone a long way in the program of self-care, and except for an occasional suggestion in the use of a few self-help devices, he requires little or no help in getting in and out of bed, dressing, eating, going to the toilet, etc. It has been a never ending source of amazement to observe how quickly a hemiplegic, or any handicapped person for that matter, learns to resolve the specific problems of self-care without formal retraining.

Occupational therapy, particularly valuable in retraining of the hand, is still largely an institutional procedure. However, a little attention to the pursuit of hobbies and simple handcraft activities at home can assist greatly in the rehabilitation of the hand. We have found nothing so far which is superior to the handling of cards in solitaire for retraining in coordination. The use of picture puzzles and checkers serve the same purpose. Speech therapy for the aphasic need not be an insurmountable problem. Most communities with progressive school administrations employ one or more speech therapists whose aid can be secured during off school hours for guidance in the home. The treatment of the adult is a welcome variation from the monotonous routine of treating children with the simple defects of speech, and a request for assistance in our community has never been refused by any of the several speech therapists available. Problems in nursing care are referred to the Visiting Nurses Association which never fails to cooperate wholeheartedly in the management of the hemiplegic. On occasion special problems might be referred advantageously to Public Assistance Groups, Family Welfare Agencies, Mental Health Clinics, the church, etc. The local State Vocational Rehabilitation offices might be consulted for further guidance, evaluation and retraining for employment. Unfortunately, in our locality service is restricted to those who might be guaranteed employable within a ninety day period and, since this is impossible with most hemiplegics we see, reference is rarely made to this agency. Special problems such as an ankylosed hip and short leg and a hemiplegia on the opposite side, or an above knee amputation with hemiplegia on the same side, require specialized variations in technics and will be discussed at another time.

DISCUSSION

It appears that a simplified home program for the rehabilitation of hemiplegics is the more practicable approach to this ever increasing problem. The visionary hopes of great numbers of community rehabilitation centers and institutions for the disabled cannot be denied commendation or encouragement, but full realization of adequate facilities and personnel for all hemiplegics, not to mention other disabling conditions, is just as remote as ever. We are in accord with Shindell who feels that the "costs of facilities and personnel necessary to hospitalize all these patients are rapidly becoming prohibitive. There appears to be no practical alternative to hospitalization other than some form of home care." Most patients prefer to be at home in their natural environment with the comfort of their own beds and the freedom of their own households. They can be spared contact with the misfortunes of others and are relieved of the anxiety of mounting expense during total loss of earning power. The Extra-Mural Program of the Montefiore Hospital of New York City and Bellevue Hospital's Home Care Transfer Program bid fair to demonstrate the most practicable approach to the problem of adequate care. The recommended plan of a hospital organized program coordinating the services of physicians, nurses, physical therapists, occupational therapists, speech therapists, social workers and others, merits keen interest as a simple, inexpensive, workable plan. The interested family physician can serve as his own rehabilitation coordinator if he will take the time to learn the simpler technics in rehabilitation and familiarize himself with facilities in his own community.

SUMMARY

A simplified program for the rehabilitation of hemiplegics in the home is presented as a more practicable approach to the problem of adequate care. An illustrative case has been presented to demonstrate that in one instance, at least, a home program can supplement the efforts of the rehabilitation center. Adequate care for hemiplegics and other disabling conditions can be a reality now or anytime if students and physicians can be impressed with the feasibility of management

in the home with simplified technics, with a minimum of expense, and a minimum of training.

REFERENCES

1. Covalt, D. A.: Training of the Hemiplegic Patient. Modern Med. Pp. 101-104, February 15, 1950.
2. Covalt, D. A.: Rehabilitation of the Hemiplegic Patient. Phys. Ther. Rev. 29:11 November, 1949.
3. Covalt, D. A.: Rehabilitation of the Hemiplegic Patient. Southern M. J. May, 1950.
4. Leavy, I. M.: Physical Therapeutics in Hemiplegia. Arch. Phys. Ther. X-ray, Radium 14:607 July, 1933.
5. Mann, Allan I.: Rehabilitating the Hemiplegic. Med. Rec. 142:311 Oct. 1935.
6. Dinken, H.: Physical Treatment of the Hemiplegic Patient in General Practice. J. A. M. A. 139:18 Pp. 1255-1257, April 30, 1949.
7. Warren, M.: Care of the Hemiplegic Patient. The Med. Press 219:18 Pp. 396-398, May 5, 1948.
8. Newman, M. K., Cohen, L.: Physical Medicine and Rehabilitation in the Management of Hemiplegia in the Adult. J. Mich. State Med. Soc. 49:917-922 Aug. 1950.
9. Treister, B. A.: Physical Medicine and Rehabilitation in Geriatrics. Phys. Ther. Rev. 30:10 Oct. 1950.
10. Snow, W. B.: Rehabilitation of the Patient with Hemiplegia. Occ. Ther. and Rehab. 28:6 Pp. 477-483 Dec. 1949.
11. Veterans Adm. Pamphlet 10-29: Rehabilitation of the Chronic Neurologic Patient. Veterans Adm., Washington, D. C. May, 1949.
12. Bierman, W.: Hemiplegia. Am. J. Nurs. 46:2 Feb. 1946.
13. Lowman, E. W.: Rehabilitation of the Hemiplegic Patient. J. A. M. A. 137:5 p. 431-436 May 29, 1948.
14. Schwartz, F. F.: Physical Medicine in Hemiplegia. J. Med. Ass'n. State Ala. Jan., 1950.
15. Schmidt, W. H., and Furey, C. A.: Rehabilitation of a Stroke. Phila. Med. Pp. 141 passim, Sept. 9, 1950.
16. Prochazka, A.: Nursing Care in Hemiplegia. Am. J. Nurs. 46:2 Feb. 1946.
17. Yamshon, L. J.: Beds and Rehabilitation. Arch. Phys. Med. 31, Pp. 286-287 May, 1950.
18. Daniels, L., Williams, M., Worthingham, C.: Muscle Testing. Saunders, Phila., 1946.
19. Kendall, H. O., and Kendall, F. P.: Muscles Testing and Function. Williams and Wilkins, Baltimore, 1949.
20. Deaver, G. G., Brown, M. E.: Physical Demands of Daily Life. (no. 1) New York: Institute for the Crippled and Disabled, 1945.
21. Covalt, D. A., Yamshon, L. J., Nowicki, V.: Physiological Aid to the Functional Training of the Hemiplegic Arm. Am. J. Occ. Ther. Nov.-Dec. 1949.
22. Yamshon, L. J., Matchek, O., Covalt, D. A.: The Tonic Neck Reflex in the Hemiplegic. Arch. Phys. Med. 30; Pp. 706-711 Nov. 1949.
23. Rudolph, H. L.: The Use of Overshoe Buckles in Braces. J. Bone & Joint Surg. 32-A:4 p. 953 Oct. 1950.
24. Von Werssowetz, O. F.: Supportive Appliances for Ambulatory Rehabilitation of Hemiplegics. Phys. Ther. Rev. 31:1 Pp. 13-16 Jan. 1951.
25. Deaver, G. G.: Wheel chairs. Phys. Ther. Rev. 29:11. Pp. 565-6. Nov. 1949.
26. Self-Help Devices for Rehabilitation. Mimeographed pamphlets. Institute of Physical Medicine and Rehabilitation. 325 East 38th St., N. Y. C.
27. Baruch Committee on Physical Medicine: Report on a Community Rehabilitation Service and Center. 30 N. Michigan Ave., Chicago.
28. Shindell, S.: A Method of Home Care for Prolonged Illness. Pub. Health Rep. 650:20 Pp. 651-660 May 19, 1950.
29. Bluestone, E. M., Cherkaskey, M.: Home Care, Origin, Organization, and Present Status of the Extra-Mural Program of the Montefiore Hospital. Published by the Montefiore Hospital, N. Y. C., 1949.
30. Abramson, Judith: Bellevue Hospital's Home Care Transfer Program. Pub. Health Nurs. Sept. 1950.

The National Society for Crippled Children & Adults, Inc.
11 S. LaSalle St., Chicago 3, Ill.
The Easter Seal Agency

Physical Therapy in Medical Diseases of the Chest*

Evelyn A. May

Before discussing the physical treatment of medical diseases of the chest, it should be stated that the material presented is based entirely on the work in which I was privileged to participate at the Brompton Hospital for Diseases of the Chest in London. At this hospital, large inpatient and outpatient services are maintained and every type of chest disability is treated. Physical therapy is considered an integral and essential part of the patient's treatment and rehabilitation, and the physical therapy staff is called upon to give preoperative and postoperative care in nearly all of the surgical cases, and to treat many of the medical cases.

This discussion is based on the principles and methods used in the physical therapy department there, and on lecture material prepared by Miss Jocelyn Reed, the Head Physical Therapist. As early as 1927, the Asthma Research Council was established in London, and you are no doubt familiar with the booklet called "Physical Exercises for Asthma" published by them. Literature on the physical treatment of medical diseases of the chest is not extensive and a large field is ready and waiting to be explored by the physical therapist, working in close cooperation with the cardiopulmonary laboratory, to prove or disprove the value of breathing exercises in the treatment of medical as well as surgical chest disabilities.

In this discussion diseases which are similarly treated by physical means will be grouped together.

Asthma, Emphysema and Recurrent Bronchitis

The place of physical therapy in the management of individuals suffering from these diseases (and one or more may be present in the same patient) is an extremely important one, and one that requires a great deal of perseverance and patience on the part of both the physical therapist and the patient. Improvement is not dramatic but is steady, often requiring months and even years of treatment to attain the desired results.

What results do we aim for in the treatment of these conditions? In the case of the asthmatic, freedom from the fears and social disarticulation which accompany "attacks," and normal physical appearance and posture; in the emphysematous patient, the ability to expire more residual air, mobilization and better functioning of the lower chest and diaphragm; in the chronic bronchitic, a better functioning chest.

The prescription for physical treatment in these diseases presupposes a thorough investigation by the physician into the causes of the symptoms and the treatment of these by appropriate means.

The asthmatic patient presents a rather typical picture: often thin with an anxious expression and poor posture—forward head, hunched-forward shoulders, kyphotic thoracic spine, tense and overworked accessory muscles of respiration, barrel-shaped chest varying in degree from mild to severe, and the typical difficulty in breathing.

Pretreatment examination by the physical therapist includes a careful assessment and record of posture including shape of the chest. Movement in the several areas of the thorax should be noted: Does it move in all areas (upper, middle, and basal) during respiration, or is the lower chest held fairly rigid while movement occurs mostly in the upper chest with a heaving motion?

At the Brompton Hospital, chest measurements, with the patient sitting, are taken with a tape measure at the fourth rib level, in the epigastric region at about the level of the ninth costal cartilage, and at a level just below the costal margin. The tape is held firm but not tight and measurements are taken at rest, on inspiration and on expiration. The measurements are taken three times and if a variation is noted the middle reading is the one recorded. The measurements are recorded in the following manner:

Physical therapist, National Jewish Hospital, Denver, Colorado. Formerly at the Brompton Hospital for Diseases of the Chest, London, England.

*Read before the Annual Conference of the American Physical Therapy Association, Glenwood Springs, Colorado, June 1951.

CHEST MEASUREMENTS

Fourth Rib:—			
Resting 31¾″	(Exp.)	31¼″	1¾″
	(Insp.)	33 ″	
Epigastrium:—			
Resting 29″		29 ″	1½″
		30½″	
Subcostal:—			
Resting 26″		25½″	½″
		26 ″	

These recorded measurements tell, at a glance, the breathing habits of the patient, and many patients of this type show a breathing pattern in the basal and diaphragmatic areas that is just the opposite of the normal. Measurements made with a tape measure are not absolutely accurate but when carefully done they give an adqeuate assessment of chest movements. I have had no experience in the use of Dr. Newman's Expansometer and chest calipers but, having seen them demonstrated, I feel their use would be of value and of greater accuracy than the tape measure method.

The vital capacity is also taken before the course of treatment is begun and at monthly intervals thereafter. With the patient seated, three readings are taken, with a rest between each effort, and if a variation occurs the middle reading is recorded as the correct one.

Here again it would seem wise to replace the vital capacity test with the maximum breathing capacity test whenever the apparatus for this test is available. The use of this test is becoming more widespread and certainly gives a more accurate picture of pulmonary function than the vital capacity test. Asthmatic and emphysematous patients tend to have a lower vital capacity than normal and would no doubt show a lower maximum breathing capacity also. An improvement in performance of these tests is a source of encouragement to the patient and a tangible record of progress.

Before beginning treatment, a full and simple explanation is given to the patient, telling him the plan of treatment and what cooperation is expected of him. Unless the patient is willing to cooperate and practice faithfully between treatments, very little if any progress can be expected.

The aims of physical treatment are threefold and are closely allied and integrated one with the other. They are:

1. To achieve relaxation
   a. General.
   b. Local, of the overused accessory muscles of inspiration and shoulder girdle.
2. To retrain breathing habits and teach breath control
   a. By specific breathing exercises.
   b. By combining graded exercises with controlled breathing.
3. To develop a good posture and a normal easy carriage at all times.

Relaxation

Asthmatic children, as a rule, do not require training in relaxation but adults, almost without exception, do require it. The method of general relaxation training used at the Brompton Hospital is based on Dr. Fink's method as described in his book "Release from Nervous Tension," modified as necessary according to the patient's capacity: e.g. many asthmatics are unable to assume the supine position without discomfort and embarrassment of breathing. I believe that any reliable method which the particular physical therapist has found successful in her experience can be used for teaching general relaxation to the asthmatic patient.

Relaxation of the overused accessory muscles of respiration and shoulder girdle is a part of the general relaxation program but some special attention is devoted to these areas. Rhythmic swinging exercises and "stretch-relax" exercises are given.

Breathing Exercises

The breathing exercises taught are designed to improve the efficiency of the expiratory phase of respiration, to decrease the activity in the upper part of the chest, and to increase the activity of the diaphragm and the lungs in the lower costal area. This type of patient has great difficulty in his efforts to expire air, which results in prolonged expiration. Inspiration consists of short gasps and because inspiration is naturally a more forceful movement than expiration the amount of residual air increases and the lungs become distended. In long-standing cases of asthma, this distension of the lungs and the overlying chest wall may become fixed as indeed it is in cases of organic emphysema. In cases treated early, this fixation can usually be minimized.

Three basic breathing exercises are taught:

1. Long expiratory diaphragmatic breathing.
2. Short expiratory diaphragmatic breathing.
3. Localized lateral basal expansion.

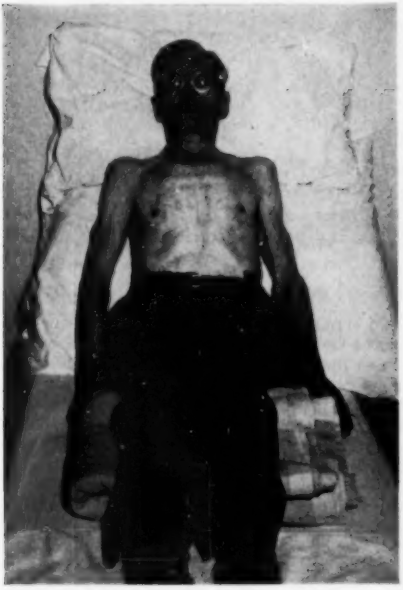


Figure 1.

The position used for the *first exercise* (long expiratory diaphragmatic breathing) is a sitting position on a plinth or bed with an adjustable head piece, or on a flat surface using pillows or cushions for support in the sitting position. *(See Figure 1.)* The patient, who should be as relaxed as possible, exhales through the mouth with a long, forceful expiration (as in blowing out a candle or making an "f" or "s" sound), sinking the upper chest first, and then forcefully contracting the upper abdominal muscles and the lower rib cage. At first this expiration may not be of very long duration but with practice the length of expiration will increase. Coughing may result from the expiration but this should not be a deterrent to continuation. If the patient can cough up the offending mucus and clear the bronchial tract, so much the better. Following the long expiration, the patient inhales quietly and gently through the nose, relaxing the upper abdominal muscles and the lower rib cage. Every effort is made to keep the upper chest relaxed on inspiration. Frequent rest periods are given, as concentration on controlled respiration is not possible for long periods of time. When this exercise is taught to the patient, the physical therapist rests her fingers lightly on the front part of the lower ribs to indicate where the contraction and relaxation is to take place. Later, the patient is taught to do this for himself, care being taken to avoid hunching of the shoulders or tensing of any of the muscles of the shoulder girdle.

The *second breathing exercise* (short expiratory diaphragmatic breathing) is a modification of the one just described. This exercise is the only one that is useful in aborting or controlling an "attack" and in overcoming breathlessness after exertion. It is a short, sharp expiration with forceful contraction of the upper abdominal muscles (keeping the upper chest relaxed), followed by a gentle inspiration relaxing the upper abdominal muscles. The expiration and inspiration are of equal length and the rate of respiration is faster than normal. If the patient is extremely breathless, the position in which this exercise is done may need to be modified from the one used for long expiratory diaphragmatic breathing, to one of the following:—

1. High side lying with plenty of pillows for support, the upper arm lying in front of the body and the hips and knees flexed. *(See Figure 2.)* This position helps to keep the upper chest quiet during inspiration and makes relaxation of the upper abdominals easier.

2. Patient kneeling on a flat surface, sitting back on heels, trunk nearly horizontal or at an angle of 45 degrees, with the arms and head supported on a pile of pillows. *(See Figure 3.)* This position, like the one just mentioned, makes relaxation of the upper abdominals easier on inspiration.

3. A modification of position "2" with the patient standing, the arms and head supported on a mantel or similar fixture of suitable height, the entire body at about a 45 degree angle from the feet to the head. *(See Figure 4.)*

The short expiratory breathing exercise is used not only during "attacks" but after exercises requiring exertion, to regain breath control; in walking, stair climbing and similar activities; and is then done in the upright position.

The *third breathing exercise* taught is "localized lateral basal expansion." The purpose of this exercise is to gain full use of the bases of the lungs and to mobilize the lower rib cage. The position is high sitting with back supported, or sitting on a stool or chair with the body leaning slightly forward and the back straight. This exercise is done against graded pressure to the basal costal area given at first by the physical therapist and later by the patient himself. This exercise is also taught by using a surgical webbing belt (about 2½ inches

Figure 2.

Figure 3.

wide) to apply the localized pressure. Its use minimizes the tendency of the patient to tense the muscles of the upper chest and shoulder girdle. While one side of the lower chest is stabilized by the pressure of the hand or belt, the other side is expanded against graded pressure, the pressure decreasing at the limit of expansion and inhalation. Pressure is again applied on expiration, the amount increasing slightly at the limit of expiration and contraction. Taught unilaterally at first, this exercise is then performed bilaterally, keeping in mind at all times the importance of relaxation of the upper chest and the shoulder muscles.

Other exercises specifically designed to mobilize the thorax are also given, both separately and in combination with breathing exercises, to teach breath control.

Posture

Posture training for asthmatics does not differ essentially from posture training given for other posture cases. After posture examination has been given, exercises designed to correct the existing faults—forward head, hunched shoulders, dorsal kyphosis, etc.—are taught to the patient. The exercises are graded according to the patient's ability and tolerance, and are combined with controlled breathing wherever possible.

Treatment must be adjusted to the individual patient; e.g. mouth breathing in children corrected, postural drainage given when it is indicated, and necessary precautions taken if there is some complicating factor. Breathing exercises for emphysema patients are limited to expiratory exercises only, as the expansion or distension of the lungs is already too great.

At the Brompton Hospital this type of patient is treated in classes organized according to age and sex. There are forty-five minute classes twice a week for men, women, boys, girls, and children. Two evening classes are held each week for employed men and women. The pretreatment examination for all patients has already been described. The first ten minutes of the class time is devoted to seeing patients individually to check on breathing exercises and general progress. This necessitates the services of several physical therapists if the class is large. One physical therapist, with one or more assistants, then conducts the class. Group stretching and relaxation exercises are given, followed by exercises for chest and trunk mobilization, posture, walking, and balance. Breathing exercises to overcome breathlessness from exertion and for breath control are given between these other exercises.

Figure 4.

The training of this type of patient is exacting and time consuming, and much depends upon the physical therapist's ability to "put across" to the patient the importance of becoming self-reliant. Home practice by the patient is an absolute essential. The patient must become so familiar with his new breathing pattern and postural correctiions that in time these become automatic. The services of the physical therapist, so necessary at the beginning of treatments, must become less and less essential to the patient.

Lung Abscesses, Collapsed Lobes, mild or very severe Bronchiectasis

The aims of physical treatment in this group of diseases are:

1. To clear the abscess or dilated bronchi of mucopurulent secretions
   a. By postural drainage and percussion movements (clapping or vibrations) as indicated.
   b. By expiratory type breathing exercises.
2. To re-establish expansion in areas where this is restricted by localized expansion exercises.

The position or positions for postural drainage are decided upon by examining the postero-anterior and lateral view bronchograms or X-rays to determine which bronchi are to be drained. The optimal positions for draining each area have been worked out. The patient is placed, or places himself, in the indicated position and for the first few minutes gravity alone is employed. Often the position itself is sufficient to initiate drainage. While the patient is in this position, clapping and vibrations are given by the physical therapist. This further facilitates drainage by helping to loosen adherent secretions. In the case of lung abscesses vibrations only are given, and these with the greatest discretion, and never if there is any danger of hemoptysis. While the patient is in the postural drainage position, expiratory breathing exercises similar to those described for asthmatics are done.

When the areas being drained are clear, localized expansion exercises are given to the areas of restricted movement, the basal, the upper lateral, the pectoro-apical or the posterior area, as the particular case demands.

When postural drainage is indicated for bronchiectasis, several different positions may be required of the patient; e.g. drainage for an anterior basic lobe and a middle lobe.

The time devoted to postural drainage depends entirely on the condition of the patient. In mild cases of bronchiectasis, a patient may get along fairly well draining only once a day, usually in the morning. In a very severe case with extensive involvement it may be necessary to devote as much as four hours a day to this procedure. As in the case of asthmatics, the patients learn the positions and must cooperate and assume responsibility for maintaining them as required.

A similar regime is followed preoperatively for those cases which are to have surgery. As these cases are all admitted to the hospital, the program can be carried out daily under the direct supervision of the physical therapy department.

Pneumonia and Pleurisy

There is a place for physical treatment in the rehabilitation of patients recuperating from pneumonia and pleurisy of nontuberculous origin. Modified localized expansion exercises will help overcome partially collapsed lobes and restore restricted chest movements to normal. Localized expansion exercises, similar to those discussed briefly for nonsurgical bronchiectasis, are given to all areas of the affected side. Foot, leg, and postural strengthening exercises, such as are given to any patient who has been confined to bed for a long period, are indicated before the patient becomes ambulatory.

Pulmonary Tuberculosis

In view of the controversy that exists as to the advisability of giving any sort of "breathing exercises" to pulmonary tuberculosis patients, I rather hesitate to mention the subject at all. In its defense let me say that "exercise" is perhaps a poor term to use, and that it should be qualified to mean the training of an individual to make the most efficient use of his lungs and diaphragm without increasing the activity of these structures. Strenuous breathing exercises are never given. In the case of an upper lobe lesion, for example, it is possible to teach the patient to relax that particular part of the chest, and in this way possibly give local rest to the underlying affected lung tissue. Tuberculosis patients on a rest program should certainly have the opportunity of receiving instruction in posture.

This brief discussion of the physical treatment of medical diseases of the chest, including asthma, emphysema, chronic bronchitis, lung abscesses, collapsed lobes, bronchiectasis, pneumonia, pleurisy and pulmonary tuberculosis, brings to mind two questions.[1]

1. Are medical chest patients being referred to our departments for treatment?

2. If they are not, is it because physical treatment is of no value in these conditions, or is it because we have failed to recognize its importance?

Clinical observation shows that medical chest patients improve with physical therapy, but there is still a need for scientific research in controlled case studies treated in the physical therapy department and tested in the cardiopulmonary laboratory.

The Army and Veterans Administration recognize the importance of physical therapy in surgical chest conditions, but what about our civilian hospitals? Are physical therapists being asked to do their part in the rehabilitation of traumatic chest cases following automobile and other accidents? And what about the "chronic chest cripple"? Is he being given the same opportunity for rehabilitation as the patient with such relatively uncommon and prognostically less favorable diseases as infantile paralysis, cerebral palsy, hemiplegia, or multiple sclerosis?

Causes and Corrections of Deviations in Gait by the Above-Knee Amputee

Alice Seligman, M.A.

Deviations in gait by the above-knee amputee have been the subject of a number of papers by physical therapists working with this problem, but to the author's knowledge, they have not dealt with causes and corrections. Ideally a patient is trained to balance on the normal leg and to use crutches before the delivery of his prosthesis, but we will not cover this phase—we will deal only with the training which is started as soon as the prosthesis is delivered to the amputee.

The doctor, physical therapist, limbfitter, and amputee must realize that initial training in the use of a prosthesis is of vital importance since the basic patterns, developed at the time of delivery and soon after, will be reasonably permanent ones. To rectify poorly established walking patterns is a major task, but if deviations in gait are expected and corrected in the early training period, the proper walking pattern can be learned and the amputee can get the maximum use of his prosthesis. At this time it is also advantageous to orient the amputee as to the working mechanism of his prosthesis.

The patient should be taught to handle the prosthesis on level terrain first, with emphasis on the following factors:

1. Lead with the prosthetic foot.
2. Carry the prosthetic foot as close to the ground as possible, in order to approximate the normal step and overcome lost motion.
3. Remain on the prosthesis as long as on the normal foot.
4. Carry head erect, shoulders relaxed, allowing for a free swing of the arms.
5. Bend the knee of the prosthesis, after toe-off on the prosthetic foot, so that it will not be necessary to rise excessively on the ball of the normal foot to clear the ground.
6. When bearing full weight over the prosthesis in order to maintain stability at the knee, press the stump back in the socket with the knee fully extended. This affords alignment stability and overcomes any tendency of the knee to buckle.
7. Maintain an open angle of the hip to avoid a lordotic gait by learning anterior-posterior balance.
8. Keep the pelvis level in the same line of progression.
9. Practice before a full length mirror so that the deviations can be observed and corrected.

Even though the amputee understands the above points, it will, of course, take time for him to incorporate them into his walking pattern. If he can be taught to understand and correct the problems discussed here, he will learn the proper walking pattern and gain confidence and mastery of the prothesis.

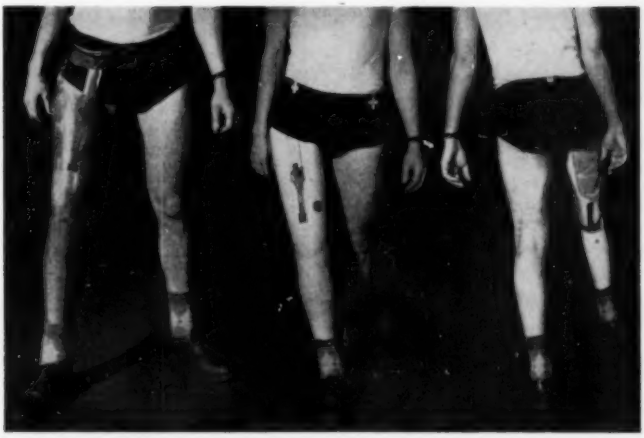


Figure 1. *Figure 2.* *Figure 3.*

SOME COMMON DEVIATIONS OF GAIT

I. *Abducted Gait* is walking with greater than normal distance between the feet. This can also be observed by noting the plane in which the hand travels. *(Figure 1)*

Causes	Corrections
Pressure in the crotch area.	Have the limbfitter check the fit of the crotch region of the prosthesis.
Instability on the prosthesis (the patient uses a wide base for security).	Have the patient walk directly over the prosthesis in the line of progression, at the same time attempting to touch the medial border of the opposite heel.
An abduction contracture of the stump.	Stretch out contracture of the stump and strengthen the opposing adductor muscles.
The pelvic joint of the prosthesis set in abduction.	Re-align the pelvic joint of the prosthesis.

II. *Trendelenberg Gait* is a dipping of the pelvis on the side opposite the prosthesis. *(Figure 2)*

Cause	Corrections
Weakness of the abductors of the hip on the side of amputation, allowing the trunk to collapse on the opposite side.	Give strengthening exercises for the weak abductors. Have patient "grow tall" on the prosthesis during walking exercises. Coordinate the two exercises above.

III. *Circumduction of the Prosthesis* during the swing phase of walking. *(Figure 3)*

Causes

The shin of the prosthesis set obliquely at the knee.

An abduction contracture on the side of the amputation.

A short stump which cannot control the circumferential swing. This is found primarily in the wearer of a suction socket limb since that type of prosthesis is more dependent on muscular control than conventional limbs.

Constriction of the abductors by the socket of the prosthesis.

Corrections

Have the prosthesis properly aligned.

Stretch out the abduction contracture.

Have the prosthesis socket properly fitted.

Strengthen the abductors of the stump.

IV. *An Increased Lumbar Curvature on the Prosthetic Side* when bearing weight. *(Figure 4)*

Causes

Shoulders are held backward in an attempt to acquire balance and stability.

Pelvis is tilted backward.

Flexion contracture of stump.

Corrections

Keep the shoulders relaxed allowing the arms to swing freely. Maintain an open angle of the hip when bearing weight on the prosthesis.

Tilt the pelvis forward.

Stretch out the flexion contracture.

Figure 4. *Figure 5.*

V. *Timing of the Prosthetic Step*. The time between steps (heel impact) is shorter with the prosthetic foot than with the normal foot. *(Figure 5)*

Causes	Corrections
Carry-over of bad habit.	Teach amputee to walk directly over his prosthesis.
A stiff heel rubber in the prosthesis, causing amputee to take the weight off the prosthesis too fast.	Adjust the heel bumper.
Insecurity on the prosthesis, causing more time to be spent on the normal foot.	Have the patient spend as much time on the prosthetic foot as on the normal foot. Have the patient practice balancing exercises on each leg. Have patient walk to beat of metronome or count cadence.
Socket discomfort.	Have the limbfitter adjust the socket.

Figure 6. *Figure 7.*

VI. *A Longer Prosthetic Step Than That of the Normal Foot. (Figure 6)*

Causes	Corrections
Too great an arc of motion on the forward swing of the shin of the prosthesis.	Install a friction device in conjunction with a kickstrap, and adjust these to the needs of the patient. The use of a friction device will aid in strengthening the musculature of the stump, since it offers an active resistance to the amputee while walking.
Insecurity on prosthesis, fear of the knee buckling.	Teach the amputee to control the prosthesis with stump action and have prosthetic knee adjusted accordingly.

VII. *Exaggerated Heel Raising of the Normal Leg During the Swing Phase of the Prosthetic Step.* (The entire body is elevated on the normal side, as if the amputee were trying to climb over an obstacle.) *(Figure 7)*

Causes	Corrections
Prosthesis too long.	Have prosthesis adjusted.
Compensation for the lack of toe push-off in the prosthetic foot.	Teach patient to walk over the entire sole surface of the foot. When walking, he should duplicate normal heel-toe step pattern.

Cause	Correction
Avoiding the proper use of the prosthetic knee, due to the fear of buckling. (In such cases the prosthesis is used like a "peg leg.")	Emphasize bending the knee of the prosthesis with each step. Increase the arc of forward swing of the prosthesis.

VIII. *An Exaggerated Swing of the Arm on the Normal Side Seen from the Time of Toe-Off of the Prosthetic Foot.* This is usually accompanied by a restrained swing of the arm on the side of the amputation. *(Figure 8)*

Cause	Corrections
The patient uses this technic to propel the body in the line of progression using the alternate gait pattern.	Relax the shoulders and allow the arms to swing within the normal arc of motion. Exaggerate the arm swing on the side of amputation until a balance of the arm swing is achieved.

IX. *A Lateral Bending of the Trunk from the Hip Over the Prosthesis, Primarily Found Upon Weight Bearing.* In some instances the feet will be widely separated. *(Figure 9)*

Causes	Corrections
A short prosthesis.	Have the prosthesis adjusted.
A weak quadratus muscle on the side opposite the prosthesis.	Perform muscle strengthening exercises.
Favoring the prosthetic side.	

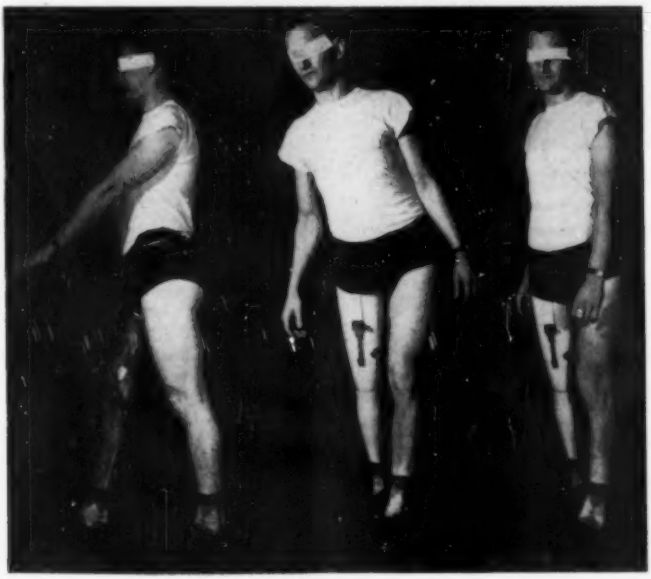


Figure 8. *Figure 9.* *Figure 10.*

Cause	Correction
Compensating for poor balance.	Instruct amputee to relax shoulders, hold head erect when bearing weight on the prosthesis. Suggest he choose site at eye level and walk straight toward it, eliminating excessive head motions.

X. *Twisting of the Entire Body Around the Vertical Axis During the Swing Phase of the Prosthetic Step.* This is usually found in new amputees. *(Figure 10)*

Causes	Corrections
Insecurity on the prosthesis, fear of falling.	Practice balancing exercises.
Walking with a stiff hip and knee gait. Avoiding the full use of the stump.	Have amputee walk directly over the prosthesis, using complete hip and knee motions. Eliminate body twisting by helping patient hold the pelvis straight.

XI. *External Rotation of the Prosthetic Foot Upon Heel Contact of the Prosthesis.* This is usually observed in new wearers of suction socket prostheses. *(Figure 11)*

Causes	Corrections
Too stiff a heel rubber in the prosthesis.	Install a softer heel rubber in prosthesis.
Lack of control of internal and external rotation of the hip.	Give patient exercise to strengthen the weak muscle groups.
Poor fit of the prosthetic socket.	Adjust fit of prosthesis.

Although it is realized that different technics for initial training have been developed by other physical therapists, the material furnished in this paper has been found to be very satisfactory in the training of many above-knee amputees.

Acknowledgement is given to Miss S. Brunnstrom, Director of Physical Therapy, Kessler Institute for Rehabilitation, New Jersey, for her contributions in the field of amputee rehabilitation on which this article is based.

In the preparation of this article, the author also acknowledges the contribution of Herbert E. Kramer of the Prosthetic Devices Study, New York University.

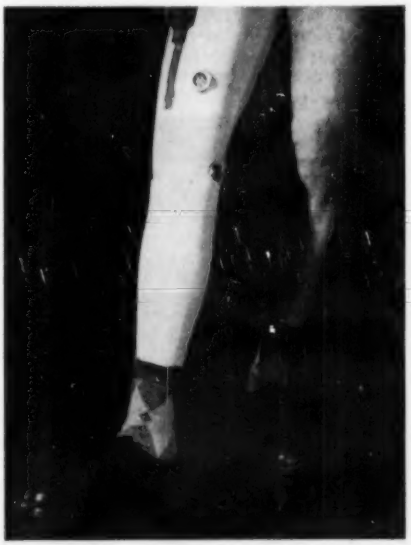


Figure 11. (Right)

Editorials

PLANS FOR THE 1952 Conference of the American Physical Therapy Association were announced in the February issue of the *Review*. Two items of interest require special emphasis since they directly reflect the continued growth and advancement of our organization. These concern the innovations of concurrent scientific meetings and postconference instructional courses.

"Growth and Development" prompted the plan for concurrent meetings. Obviously, the increasing attendance at each conference is an indication of numerical growth. No longer is it always possible to be assured of adequate space for all members to meet together at one time. Of greater importance is the expansion of areas of interest for all physical therapists in a widening variety of special fields. With the utilization of physical therapy by more and more of the medical specialties, it becomes a responsibility of the Association to provide its members with diversified information. Obviously, time and space will always limit these opportunities. The device of simultaneous sessions, however, seems to be a wise approach to the solution of this problem.

It is with great pleasure that we comment on the establishment of a program of Instructional Courses at the 1952 Conference. This is significant in the development of the entire field. Educational growth and the maintenance of knowledge of both new and recognized technics remain basic requirements for members of a soundly established and dynamic profession. These courses add tremendously to the year round opportunities already available to each of us for participation in valuable learning situations. May we urge each of you to consider the advantages offered by these courses, and by actively taking part insure their success.

Have You Seen This?

"The Job of the Physical Therapist" is a detailed analysis of what the therapist does, the conditions under which he does it, the physical, intellectual, emotional and social demands of the job,' and the characteristics of the worker that are essential to job success.

The analysis was done in 1950 by members of the staff of the New York University Testing and Advisement Center as the first element in the American Physical Therapy Association's three-year Student Selection Research Project. In preparing this material, installations visited were chosen so as to be representative of physical therapy in terms of specialization, size of staff, case load, physical facilities, geographic location, equipment and other relevant factors. (Refer to list of available reprints for charges.)

World Confederation for Physical Therapy

Britain and the Scandinavian Conferences

The trip to Europe this summer was so full of new and interesting experiences that the selection of those that might be of greatest interest to others was difficult.

First, we arranged to visit Britain on our way to Copenhagen. One of the high lights of that part of the trip was an afternoon spent at the St. Thomas Hospital School of Physiotherapy in London.

Our first view of the bomb-battered hospital was from Westminster Bridge. Situated at the foot of the Bridge, across the river from the House of Parliament and near the all-important docks, it had received many of the blows intended for other targets during the war. Whole sections of the building were gone with only a bare foundation remaining. Later we stood before the memorial plaque to the physical therapists who lost their lives during the London raids, with a feeling of the utmost respect for our professional co-workers who had carried on their duties, without break, during those trying times.

Mrs. Vidler, the principal of the school, and her staff were most cordial and made every effort to allow us to see as many aspects of the program as was possible in the time available. Many of the procedures were familiar to us from reading British textbooks and journals, but far more interesting to see. For example, the application of traction by bands about the thorax and pelvis for back disabilities was demonstrated, as well as several of the manipulations of the back that are carried out by the physical therapists under the direction of Dr. Mennell. We also observed the use of various pieces of therapeutic exercise equipment which seemed basically similar to ours but usually was of a different design.

In relation to electrotherapy, we had an opportunity to inspect and try out several ultrasonic generators manufactured in Germany which were being used primarily on an experimental basis. We also viewed with interest a screened room for the diathermy machines. This has been necessary for many years in Britain, but within the next few months we must either screen our diathermies or replace the older machines.

Following a visit to the wards, a tea was served which offered an opportunity to discuss student problems. With an enrollment of 124 students in the three year course, some of the complexities of providing adequate basic preparation and clinical experience could be easily visualized. The major part of the program is carried out at the Hospital with one or two other affiliations used for special clinical training. Many of the problems seemed similar to ours and it was reassuring to know that they are not limited to one institution or one country.

In addition to our school visit, we had the pleasure of spending a day with Dr. and Mrs. Mennell at their home in southern England. After viewing the lovely valley from the front windows and walking through their English garden, it could be understood why even sunny California could not keep them long from home. It was good to see Dr. Mennell up again after a recent illness.

Throughout the conferences, during our Scandinavian visit, we had an opportunity to talk to physical therapists from many countries. We met some fine young women from Australia with whom we discussed many aspects of treatment, particularly those related to polio. Some trends in treatment in the United States are not common to that country or to many of the European countries. These discussions were among the stimulating experiences which typify the most valuable returns to be obtained from a conference.

A number of British physical therapists were asked their opinion of the effects of socialized medicine on the practice of physical therapy. It was my impression that they were more in favor of the program than against it. Several stated that the physical therapists in private practice were the ones at the greatest disadvantage, but there were many available openings in the hospitals that should be filled. It was evident from further conversation that such opportunities would be of no great solace to those individuals concerned unless hospital salaries were increased. The latter situation, of course, has been a problem in the States.

Our Scandinavian associates in both Denmark and Sweden first surprised us with their excellent English and knowledge of American affairs, and then charmed us with their friendliness and cooperation.

We were grateful to Mrs. Rudy Agersnap, Vice-president of the Danish Physiotherapy Association, who interpreted so ably not only words but ideas throughout our stay in Copenhagen. Her help with the setting up of the scientific exhibit and the staging of the demonstrations by television at the International Poliomyelitis Conference was greatly appreciated. Also, her quick understanding and able discussion of problems that arose at the

Inaugural Meeting of the World Confederation for Physical Therapy were very valuable.

The work of Dr. Clemenson, his assisting physicians, and Mrs. Wagner, chief physical therapist, from the Kommunehospitalet in Copenhagen was sincerely appreciated. They assisted with the general planning and provided patients for the television demonstrations. A number of other physical therapists from the Danish Association were most helpful in interpreting for the patients in the demonstration program. The friendly spirit of all with whom we came in contact was a constant delight and engendered a feeling of warmth for our Scandinavian hosts and hostesses that will never be forgotten.

LUCILLE DANIELS
Member of the Northern California Chapter
American Physical Therapy Association

Association Activities

The Director Reports:

In this issue of the *Review* there is a picture of the Association's new exhibit, "Physical Therapists —Their Job and Distribution." We think you will find this interesting. We did here in the office. We also think it would be worthwhile for chapters to work out maps showing distribution within their states. It will tell a story that will be of value to you in recruitment, in placement, and in other chapter activities.

The exhibit was shown recently in Los Angeles at the Interim Session of the American Medical Association, and created a lot of interest. Members of the Southern California Chapter helped to man the booth each day, which was of great help and much appreciated. It will be shown again in Los Angeles at the annual convention of the National Vocational Guidance Counsellors this spring.

While in Los Angeles, I met with the Executive Committee of the chapter and attended a chapter meeting. My full daytime schedule at the convention did not permit visits to hospital departments.

In the next ten days, I literally made a flying visit to all the West Coast chapters, except Santa Barbara. The president of that chapter came down to Los Angeles for the chapter meeting there. Even though the length of time was short, executive and chapter meetings were held, plus as many departmental visits and other appointments as could be worked in. San Diego is our newest chapter and a charter was presented to its members.

The California chapters still have their heads up and a determination to obtain a registration law in spite of all set backs and the bitter disappointment when their bill "died" on Governor Warren's desk. Even though much time, money, and energy have gone into their legislative efforts, other chapter projects have had real attention also.

The interest, enthusiasm, and good thinking, which was observed in the meetings with the executive committees and the members on the West Coast, was an inspiration to me. Budgets are low, but there are plans to obtain funds. Work is shared; this means greater interest and a sense of responsible participation on the part of many, which makes the Association a real and vital force.

As you will note on the map, percentage-wise, the West Coast is right up there with personnel as compared to much of the rest of the country. This doesn't mean there are enough, for there aren't, and recruitment in all the chapters is a major project. In Oregon and Washington there is the hope that schools of physical therapy will be a reality in the not too distant future. We hope so too, for they are needed to serve the Pacific North West.

December weather was not exactly up to a Chamber of Commerce's dream. However, luck was on my side and my travel schedule held. There was a little delay in the fog over Portland; this curtailed my already brief visit somewhat, but all the essentials were possible.

A field trip like this does provide an opportunity to get to know many physical therapists professionally and personally. There is a sharing of information, ideas, and dreams, which is mutually helpful. We learn of the broad interests of the physical therapists, their participation in community activities, their hobbies, and non physical therapy talents. Some are building houses in the mountains, some in town; others ski, play golf or raise pets. The pay-off on the latter came on my last night in Seattle at an Executive Committee meeting at Barbara Fassett's house. A little black and white animal appeared in the living room, seemed quite at home with the two dachshunds, and answered to the name of "Stinky." He wasn't though, it had been taken care of—you've guessed it—it was, and after the initial shock had passed, I went close enough to pat him.

In 1954 the annual conference should be on the West Coast according to the regional plan which we are working on. I for one am going to plan vacation time and see all those mountains, enjoy all that sunshine which in the summer months, I am told, will be a certainty.

Flexhibit Available

This exhibit is available to chapters for state and regional meetings.

The exhibit pictured requires an eight foot wall, and a minimum of four to six feet in depth. The background is gray. The posters are held in place on it by special pins which are provided.

The information on the distribution of physical therapists is of particular interest to hospitals, physicians, and voluntary agencies which sponsor treatment programs.

A duplicate of the posters has been prepared. It is framed and may be hung or set on a table. This could be combined very nicely with a map of a state showing distribution within the state.

Requests for this exhibit must be received at least *six weeks* in advance of showing date.

Dorothy Hewitt Appointed

The Executive Committee has appointed Dorothy Hewitt to succeed Margaret Moore as Educational Consultant of the American Physical Therapy Association.

Miss Hewitt is a graduate of Cortland State Teachers College, New York, and Walter Reed Army Hospital. She has been an instructor at Graduate Hospital of the University of Pennsylvania, and at Stanford University, where she was awarded an M.A. degree. For the past several months she has been supervisor of the rehabilitation unit at the Kabat-Kaiser Institute, Vallejo, California.

HELP CRIPPLED CHILDREN
1952
The National Society for Crippled Children and Adults, Inc.
11 S. LaSalle St., Chicago 3, Ill.
The Easter Seal Agency

Conference 1952

Ye Bellevue-Stratford
Philadelphia, Pennsylvania
June 23–28, 1952

Facts about the Conference

Rates

Range from $4.50 for a single room with running water, to $14.00 for a double room with twin beds and bath. Details will appear in the next issue of the *Review*.

Reservations

A blank will appear in the next issue of the *Review*, and one will be sent with your dues notice. All reservations for hotel space should be made with the hotel.

A roommate should be selected if possible. The number of singles in any hotel is limited.

Registration

Active, Inactive and Associate Members—$5.00
Student Members—$2.00
Physicians, occupational therapists, nurses and qualified physical therapists from other countries—no fee.
Professional membership card required.
Physical therapists licensed in the state of Pennsylvania, but not members of the Association—$15.00
Licensure card required.
Advance registration cards will be sent out with the dues notices. If registration is not done in advance your membership card will be required for registration.

Concurrent Meetings

This year for the first time members have the privilege of selecting a program in which they may have a special interest. This will be on Tuesday afternoon and Wednesday morning, and has been inaugurated to meet the needs of the members who have requested that these subjects be covered.

Instructional Courses

Instructional Courses Offered Concurrently—For members only.

Enrollment in each course will be limited.
If registered at the conference—$5.00
Instructional Course alone—$10.00
There will be advance registration.

Exhibits

This year exhibits are under the management of Gordon M. Marshall of Chicago, advertising agent for the *Review*. They will include, as in former years, technical, chapter and educational exhibits. A large number are anticipated which will be of great interest, and will merit spending considerable time in the exhibit area.

Research Papers for 1952 Conference

Once again there will be opportunity for individuals in the physical therapy field to present original research papers at the Conference in Philadelphia. The section has been scheduled for the afternoon of Thursday, June 26th. This year an attempt is being made to provide more time for presentation and discussion of material, and there may be two concurrent sessions if the quantity and quality of papers submitted warrant this. One page summaries of papers may be sent to the American Physical Therapy Association, 1790 Broadway, New York 19, N. Y., and must be in by March 15th in order to be reviewed by the selection committee.

Motion Pictures

Time has been set aside for showing motion pictures and slides which would be of interest to physical therapists. Any members or organizations who have movies, slides, or film strips to show at the Annual Conference may apply for inclusion in the program to the American Physical Therapy Association, 1790 Broadway, New York 19, New York. All applications must be filed by April 1, 1952.

All applications should contain the following information:

1. Title and brief description of the subject matter covered
2. Length of film and time needed to show it
3. Size of film—8, 16, or 32 mm; silent or sound; black and white or colored
4. Number of slides and time needed to show them
5. Size of slides—2 x 2, or 3 x 4; kodachrome or black and white
6. Name of organization and individual responsible for material

The Program Committee will select those films and slides which in their judgment will be of greatest interest to the audience and which will fit into the time allotted. Only films and slides thus selected will be shown.

Business Meetings and Program Schedule

June 18th, 19th and 20th
Executive Committee Meetings

June 21st

all day	School Section

June 22nd

2:00 p.m. to 5:00 p.m.	House of Delegates

June 23rd

all day	House of Delegates
4:00 p.m. to 6:00 p.m.	"Mug-up"—Pennsylvania Chapter, Inc., Hostess
8:00 p.m.	Opening Session Speakers to be announced

June 24th

9:30 a.m. to 12:00 noon	**Symposium—Hand Injuries** Lt. Col. Richard H. B. Dear, Chief, Physical Medicine, Valley Forge Army Hospital, and staff members.
2:00 p.m. to 5:00 p.m.	**Symposium on Industrial Accident Disabilities** Moderator, William A. Tomasco, M.D. Participants to be announced.
2:00 p.m. to 5:00 p.m.	**Pediatric Seminar** Participants to be announced.
7:30 p.m.	Movies

June 25th

9:30 a.m. to 12:00 noon	**Symposium on Neurological Conditions** Moderator, Joseph C. Yaskin, M.D. Participants to be announced.
9:30 a.m. to 12:00 noon	**Electrotherapy—Panel Discussion** George Morris Piersol, M.D. Other participants to be announced.
3:00 p.m. to 5:00 p.m.	Standing Committee Meetings Chapter Chairmen and National Chairmen.
7:30 p.m.	Annual Banquet

June 26th

9:30 a.m. to 12:00 noon	**Reflex Patterns of Movement** Moderator, Julius H. Comroe, Jr., M.D. Participants, Frances Hellebrandt, M.D., Herman Kabat, M.D.
2:00 p.m. to 4:30 p.m.	Research Papers Moderator, Frances Hellebrandt, M.D.
2:00 p.m. to 4:30 p.m.	Movies

June 27th and 28th
all day Friday and
Saturday morning

Instructional Courses

Electrical Investigation
Mary Elizabeth Kolb, Chief Instructor

Reflex Patterns of Movement
Margaret Knott, Chief Instructor

Analysis of Gaits
Signe Brunnstrom, Chief Instructor

Functional Anatomy
To be announced.

The Philadelphia Gazette

Vol. 3

Indulgent Reader: With this issue of the Philadelphia Gazette we are pleased to welcome a guest writer who will speak about some of the customs and habits of our neighbors to the north, variously called the Pennsylvania Dutch or Pennsylvania Germans. These fine people, living in the county of Lancaster, are a sturdy race whose diligence and fortitude are most exemplary.

North by Philadelphia once makes a country lived in by the Pennsylvania Dutch. Big and good like a dumpling is it and filled yet with farms and food and people. You can stand even on a hill, with the wind blowing your hair all stroobly so, and see all around you this rich, bustling country. Here live now the Amishers or Plain People, believers in good farming, good food, and good living.

Let us go the hill down and visit ourselves with the folk of Lancaster Town. Here live the families called Stoltzfus, Zook, Reicherbach, and Schwartzlander. Sturdy farmer folk they are, and justly proud of the big, clean barns and little clean homes that fill the valley. The barns decorated with intricate "hex" signs dominate all else, and no true Lancaster man would dream of building his home before the barn was finished. True also it is that only in the barns is one apt to find running water and electricity, for such worldliness is not for human kind. This shunning of the "worldly" influence is attested to everywhere. Notice the plain, old-fashioned clothes; the men in sober black, with great, broadbrimmed hats, and every little boy a perfect replica in miniature; while the long-gowned women, each in her little bonnet, sets the style for all the girls. No buttons, pins, snaps, or fanciness here! It makes sturdy hooks and eyes only for practicality and plainness.

Make yourself around the corner and see the houses once. Certain you are to see at least one blue gate, which legend tells us declares a marriageable daughter inside. She it may be we will see later riding with her bashful swain in the open-topped black buggy. Covered buggies are for married folk only, for it is safe to bet that wind and weather will insure the early home coming of the young folks.

Best you should see a Market day for then the people gather in the town to sell the produce fresh from the farms, while the men talk business and the women gossip and exchange news of food and farm. Perhaps you may catch a glimpse of some small fry, excited at his first glimpse of a real train who shouts, "Hey, when the little red

(Continued on page 143)

Margaret L. Moore, on a field trip, is shown with officers of the Women's Medical Specialist Corps at the Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Texas. Left to right: Claire J. Turner, Sarah J. Dempster, Margaret Moore, Priscilla A. Baker, and at the right, is the director of physical therapy training at the school, Agnes P. Snyder.

Margaret Moore Accepts Position in the South

Margaret Moore, Educational Consultant, leaves the National Office on March 15 to take up new duties in her native Southland. The University of North Carolina Hospital at Chapel Hill is the port of call. The University is establishing a four-year medical course and has recently completed its new teaching hospital. Miss Moore will be chief physical therapist, and have the opportunity to develop a treatment and teaching program.

During the past eighteen months Miss Moore has made a large and lasting contribution to the Association's educational program. She has worked like a beaver, and with enthusiasm, humor, and vision. The interest and faith that "Mo" has in the future of the profession is reflected in all that she does whether in the office or in the field. Fortunately for the Association, her interests and talents will not cease to be available with her change of residence. She will continue with the Curriculum Guide Study until its completion, and will act in an advisory capacity to her successor.

Good success to you, Margaret Moore. North Carolina's gain is a loss to the National Office. We'll miss you, but we know that you will still be putting your heart and talents to work for physical therapy and the Association.

Floy Pinkerton Convalescing

Floy Pinkerton's many friends in the Association will be happy to learn that she is able to return to her beloved Texas to convalesce from a recent cerebral hemorrhage.

In order that she may devote full time to this, the Executive Committee has appointed Margaret Kohli, Treasurer, and Virginia Greenwood, acting chairman of the Public Laws Committee.

Until an address is published for Miss Pinkerton, the National Office will gladly forward mail to her.

Membership News

Marriages

Mary Mokrychi of Windsor Locks, Conn., now Mrs. Mary M. Belanger, Windsor Locks, Conn.
Virginia Lyle of San Francisco, Calif., now Mrs. Virginia L. Boston, San Diego, Calif.
Rosemary Wiltgen of Park Ridge, Ill., now Mrs. Rosemary W. Cordes, Chicago, Ill.
Elizabeth A. Miller of Anderson, Ind., now Mrs. Elizabeth M. Edwards, Anderson, Ind.
Gladys A. Park of Greenwood, S. C., now Mrs. Gladys P. Estelle, Greenwood, S. C.
Ruth Aushman of New York, N. Y., to Aaron L. Fish, New York, N. Y.
Doris Leventhal of Bronx, N. Y., now Mrs. Doris L. Flaum, Brooklyn, N. Y.
June Morton of Baltimore, Md., now Mrs. June M. Hankins, Towson, Md.
Patricia Quinn of St. Louis, Mo., now Mrs. Patricia Q. Henderson, Albuquerque, N. Mex.
Frances Holvorson of Felton, Minn., now Mrs. Frances H. Horton, Minneapolis, Minn.
Anne K. Flynn of St. Louis, Mo., now Mrs. Anne F. McKinney, St. Louis, Mo.
Barbara Weiss of Chicago, Ill., now Mrs. Barbara W. Miner, Chicago, Ill.
Bernadette Loosbroek of Rochester, Minn., now Mrs. Bernadette L. Taylor, Seattle, Wash.
Melba Thompson of Washington, D. C., now Mrs. Melba T. Thalley, Washington, D. C.
Agnes Davis of Atlanta, Ga., now Mrs. Agnes D. Williams, Houston, Tex.
Evelyn Silberberg of Brookline, Mass., to Joseph A. Wolfson, Brookline, Mass.

Chapter Activities

South Carolina Chapter Holds Winter Meeting

The South Carolina Division of the Carolina Chapter received its charter from the American Physical Therapy Association on December 1, 1951, and its certificate of incorporation from the state of South Carolina on January 4, 1952. The chapter has twenty-one members, and plans have been made for three meetings annually—winter, spring, and fall.

The winter meeting was held at Greenwood, South Carolina, January 19th. The hostess was Mary Telford of the new Self Memorial Hospital. The topic chosen by the guest speaker, Dr. Frank H. Stelling, Chief of Staff, Shriner's Hospital, Greenville, South Carolina, was "Arthrodesis, in Regard to Increased Motion."

Much was accomplished during the business session, particularly with regard to the work of committees on Education and Public Laws. The spring meeting will be held April 5th, beginning at 9:00 A.M. Norvaile Newell, Chief of the Physical Therapy Department, Veterans Administration Hospital, will be hostess.

Ohio

The Ohio "Physioscope" announces that the annual state meeting of the Ohio Chapter will be held in Cincinnati on April 4th and 5th at the Netherlands Plaza Hotel. This January issue of the Chapter newsletter contains reports on activities of each of the four districts of the Chapter, a description of the Polio Program for Ohio, excerpts from a lecture on the treatment for rheumatoid arthritis by Mrs. Clara S. Poulsen, and a page of Cleveland Clinic School News, in addition to personal notes about members of the Chapter.

Tennessee

The Tennessee Chapter newsletter for December commendably reports many instances of good development of public and interprofessional relations. Members have appeared on television programs and spoken to professional or service groups thirteen times.

New York Chapter

The January newsletter was full of important Association projects, which should stimulate every member to participate in recruitment, legislation, and civil defense, as well as to take advantage of a well planned professional institute.

North Carolina

In January, Governor Scott appointed the State Examining Committee on Physical Therapists. In addition to one orthopedic surgeon, the following members of the chapter were named: to serve three-year terms, Helen Kaiser and Maria Kennedy; two-year term, Mrs. Marguerite Hutto; and Edna Blumenthal for a one-year term.

School News

The Bouve-Boston School of Physical Education will be known, in the future, as the Bouve-Boston School. News releases and educational notes will include reference to both physical therapy and physical education.

Cleveland Clinic

The Class of '52 has eighteen members from six states and the Territory of Hawaii.

Medical College of Virginia

The November Baruch "Scoop" announces a special alumni edition for the near future.

University of Colorado

"Stimulette" is the newsletter from the school of physical therapy at the University of Colorado School of Medicine. There are thirteen students from nine states in this year's class.

New Student Members

Boston University—College of Physical Education for Women, Sargent

Gretchen E. Baker Betty Dotson

Columbia University

Mildred R. Cook Marilyn W. Pond

Mayo Clinic

Robert D. Kruse

New York University

Stanley A. Modell

St. Louis University

Dorothy Pax

University of Iowa

Eugene R. Bowdish

General News

Physical Therapists in Air Force Receive Promotions

The latest list of temporary promotions for Air Force WMSC officers has been announced from the office of Col. Miriam E. Perry, Chief of the USAF Women's Medical Specialist Corps.

The following physical therapists were promoted to captain: Janet E. Cook, Westover Air Force Base, Massachusetts; Mary C. Ellis, Bolling AFB, Washington, D. C.; Dorothy M. Griffin, Clark AFB, APO 74, San Francisco, California; Betty F. Hearne, Barksdale AFB, Louisiana; Ladonna M. Pederson, Eglin AFB, Florida; Marjorie A. Rader, Mitchel AFB, New York; June L. Zufelt, March AFB, California. Grace M. Heltman, Sheppard AFB, Texas, was promoted to major.

Kessler Institute for Rehabilitation to Hold Sixth Annual Amputee Conference May First, Second and Third

The Sixth Annual Amputee Conference will be held at the Kessler Institute for Rehabilitation, Pleasant Valley Way, West Orange, New Jersey, on May first, second and third, 1952. Included in the conference will be a clinic for congenital amputee children scheduled for Saturday, May third.

The conference will feature lectures by staff members of the Kessler Institute and visiting lecturers, in addition to instructional films and demonstrations by patients of amputee training technics.

The conference will discuss the problems of upper and lower extremity amputees. The subjects will include psychological preparation of the patient, surgery for upper and lower extremity amputations, aftercare of the stump and general conditioning, prostheses, and training of the amputee.

Registration is open to physicians, therapists, nurses and counselors in the rehabilitation professions. Persons desiring to register should communicate with the Kessler Institute, Pleasant Valley Way, West Orange, New Jersey. For the first time, the Kessler Institute will issue certificates to all registrants who attend the full three-day conference.

Local Health Units

Any community in the country can have the health services it needs if its professional and voluntary health organizations will team up with citizen groups to support the local health department or to get one started.

That was the unanimous agreement of 52 representatives of national health, civic and fraternal groups at the 4th annual meeting of the National Advisory Committee on Local Health Units of the National Health Council, in New York, December 6.

The best machinery, it was agreed, for bringing together these allies—the doctor, nurse, teacher, housewife, businessman, farmer, worker—is the local health council or committee on which all groups are represented.

More than 1,200 communities already have such councils in operation, the Committee was told, and more are being added every month.

The big job for 1952, representatives indicated, is to encourage their state and local affiliates, total-

ing close to 50,000, to work together to help start health departments where none exist and to help expand the services of those already established.

The theme of "local responsibility," reiterated constantly throughout the meeting, was dramatized by a panel discussion of Pennsylvania's recent public health renaissance.

A group of civic and health leaders from that state, headed by Dr. Russell Teague, secretary of health, told how citizen groups, professional societies and voluntary health organizations worked together to mobilize public opinion behind permissive legislation for county health departments and for a health department merit system. These groups are now organized into a state health council, and their local affiliates are following through to see that community demand for health services is met.

The National Advisory Committee on Local Health Units on which are represented 63 national health, welfare, civic and fraternal organizations, was established in 1948 by the National Health Council, a coordinating body of 39 national health agencies and professional societies. Its purpose is to encourage and assist local communities to obtain, through municipal, county and multi-county full-time public health departments.

The seven basic services considered essential to minimum health protection for the population are:

1. To record births, deaths, sickness and accidents and use the data for planning community health programs, school health services, industrial health services and hospital and medical care facilities;

2. To control tuberculosis, venereal disease, malaria, hookworm and other communicable diseases;

3. To supervise the health of the expectant mother and of the child from birth through school years; to detect and provide for the correction of health defects—of eyes, hearing, teeth, posture and general nutrition—either directly or through existing community facilities;

4. To improve the sanitary surroundings of the community; to provide for clean water, milk and food, for healthful housing and working conditions, and for proper disposal of waste;

5. To provide public health laboratory services and to assist practicing physicians, through consultation and other services, in the prevention, diagnosis and treatment of diseases;

6. To develop services for aiding in the prevention and early detection of chronic diseases; and

7. To bring health information to the public in cooperation with school authorities, voluntary health agencies and civic and professional organizations.

Is your community thus protected?

Scholarship Information

The following information should be noted by all physical therapists who will be participating in recruiting activities for prospective physical therapy students during the coming months. The Professional Education Division of the National Foundation for Infantile Paralysis announces a change in the procedure for applying for physical therapy scholarships for the year 1952-53. All initial requests for funds must have been received in the New York office of the Foundation at 120 Broadway, New York 5, New York by June 1, 1952. All application data, including transcripts and references must be submitted by July 1, 1952, if the candidate is to be considered for an award for the school year beginning in September or October 1952 in a program in physical therapy approved by the Council on Medical Education and Hospitals of the American Medical Association.

There will be no change in educational prerequisites but applications will be judged on a competitive basis in regard to educational background and academic achievement as well as stated financial need.

Financial benefits may vary with the need of the individual obtaining an award, but may include full tuition and maintenance based on figures established by each physical therapy school. Other allowances may be, but will not exceed, $100 toward the costs of books, uniforms, and other expenses. In this way more people can be educated out of available funds to fill the needs for qualified physical therapists. All awards will be announced during the month of July 1952.

Meet Our New Contributors

Evelyn Anderson May is Consultant in Physical Therapy at the National Jewish Hospital, Denver, Colorado.

She received her B.A. degree from Mills College, and her physical therapy training at Stanford University, where she also did graduate work.

Mrs. May has held the positions of Assistant, Chief, and Special Lecturer in Physical Therapy at Stanford University Hospital, and during the war served as a civilian physical therapist with the United States Army in England.

Prior to returning to the United States, Mrs. May was Assistant Physical Therapist, Brompton Hospital for Diseases of the Chest, London, England.

Herman L. Rudolph, M.D., received his B.S. degree from Albright College, and his medical degree

from Jefferson Medical College, Philadelphia. In addition to his private practice in Physical Medicine and Rehabilitation, Dr. Rudolph is Chief, Department of Physical Medicine and Rehabilitation, St. Joseph's Hospital, the Community General Hospital, and Medical Director, ABC Cerebral Palsy Treatment Center, Reading, Pa.

Dr. Rudolph has many affiliations in the field of Physical Medicine and Rehabilitation. He held the position of Clinical Assistant, Department of Physical Therapy, Jefferson Medical College and Hospital, Philadelphia, and was formerly Consultant in Physical Medicine, U.S. Army General Hospital, Valley Forge, Pa.

For four years, Dr. Rudolph, a major in the Army Medical Corps, served as Chief of the Department of Physical Therapy at Baxter General Hospital, Spokane, and at Letterman General Hospital, San Francisco.

Dr. Rudolph is a Diplomate, American Board of Physical Medicine and Rehabilitation; President, Pennsylvania Academy Physical Medicine; Chairman, Berks County Medical Society Committee on Physical Medicine and a member of the following professional organizations: Society Physical Medicine and Rehabilitation, American Congress Physical Medicine, American Rheumatism Association, Pennsylvania State Medical Society Commission on Physical Medicine and Rehabilitation, and is a member of the County, State, and American Medical Associations.

The man who is so busy that he does not have time to read his trade papers or professional magazines is like the man who was so busy chopping wood that he didn't have time to sharpen his axe—*Your Cue to Business*, Indianapolis Business Library.

THE PHILADELPHIA GAZETTE

(Continued from page 138)

house makes, the trains all, ain't?" To which his older sister may reply, "Ach, Yohnnie, what a yumper you are! You must be verhexed!" Or perhaps overhear two farmers discussing the weather with, "Yacob, the paper wants rain, ain't?" with a reply of "Ya, it's already spritzen down."

The expression "you can't beat the Dutch" was probably inspired by someone who had tasted their cooking. "A man works hardy he eats hearty" is taken literally by the wives and a real Pennsylvania Dutch meal is a major undertaking. So sit yourself and eat, once. The well-filled table (always served family style and help yourself) has the traditional "seven sweets and seven sours." You may find Schnitz un Knepp (apples and buttons), Boova Shenkel (boy's legs), Scrapple, Saurkraut, Smierkase (cottage cheese) Kartoffel Kloesse (potato croquettes), Ob'l Frutters (apple fritters), Fastnachts (doughnuts) and Shoo-Fly Pie to name a few of the traditional dishes. Eating is the issue and dinner conversation limited. But filled as you may feel, there is still a feeling of sadness at the housewife's final words, "It looks now like the food's all"!

Index to Current Literature

Anterior Poliomyelitis

A Method of Rapid Restoration of Neuromuscular Function in Poliomyelitis. A. W. Schenker, M.D. New York State Journal of Medicine, October 15, 1951.

Orthopedic Care in Anterior Poliomyelitis. L. C. Abbott, M.D. Journal of Pediatrics, December 1951.

Second International Poliomyelitis Congress. Enid Bailey, R.N. Public Health Nursing, December 1951.

Studies on Poliomyelitis in Ontario. V. Further Observations on the Recovery of Coxsackie Viruses from Cases of Clinical Poliomyelitis. Nelles Silverthorne, M.B. Canadian Medical Association Journal, December 1951.

Cerebral Palsy

Cerebral Palsy. Eric Denhoff, M.D., V. N. Smirnoff, M.D., and R. H. Holden. New England Journal of Medicine, November 8, 1951.

Born Different. P. R. Miller, M.D. Ohio's Health, State Department of Health, November 1951.

Child Welfare

Michigan Looks Toward Coordinating Its Work for Crippled Children: Physical and Occupational Therapists Meet with Other Professional Workers to Discuss Joint Problems. J. F. Waddell and M. A. Blair. Child, U.S. Children's Bureau, November 1951.

A Study of Crippled Children in an Orthopedic Hospital School. A. F. Donofrio. Exceptional Children, November 1951.

Geriatrics

The Aged Throughout the World. O. A. Randall. Survey (New York City), November 1951.

Hydrotherapy

Royal Leamington Spa. Olive R. Robertson. The British Journal of Physical Medicine, November 1951.

"Bath Water" and the Baths of Bath. M. H. L. Demarais and K. B. Taylor. The British Journal of Physical Medicine, November 1951.

Occupational Therapy

Occupational Therapy and Chronic Illness. Joan Dorfmeier. Ohio's Health, State Department of Health, November 1951.

Pediatrics

Choosing the Right Toy. Eileen Burke. Today's Health, December 1951.

Correlation of Height and Weight in Early Childhood. H. V. Muhsam, Lancet (London), December 1, 1951.

Symposium on Child Growth and Development. Child, U.S. Children's Bureau, December 1951.

Rehabilitation

Physical Treatment and Rehabilitation of the Hemiplegic Patient in General Practice. O. F. Von Werssowetz, M.D. American Practitioner, November 1951.

Reprints Available

THE FOLLOWING INFORMATIONAL MATERIAL AND ARTICLES ON PHYSICAL THERAPY ARE AVAILABLE WITHOUT CHARGE:

Available to chapters, interested individuals and prospective students by single copies or in reasonable quantities:

PHYSICAL THERAPY—IS THIS THE DOOR TO YOUR FUTURE?—
An illustrated brochure describing the opportunities for a career in physical therapy.

APPROVED SCHOOLS OF PHYSICAL THERAPY—
A list of schools approved by the Council on Medical Education and Hospitals of the American Medical Association.

SUGGESTIONS FOR PROSPECTIVE STUDENTS—
Outlines the professional course of study for college students preparing for physical therapy. Of value to the high school student who is planning a college program.

EMPLOYMENT OPPORTUNITIES—
A brief analysis of the various types of employment opportunities open to the graduate physical therapist.

QUESTIONS AND ANSWERS—
A concise outline describing physical therapy education and applications.

Available to chapter chairmen, vocational guidance counsellors, libraries and other individuals or groups who wish more information on physical therapy than is offered in the above items:

OUR ASSOCIATION—
An informational booklet on the activities, scope and services of the American Physical Therapy Association.

CODE OF ETHICS—
Ethics for the physical therapist of the American Physical Therapy Association.

PERSONNEL POLICIES FOR QUALIFIED PHYSICAL THERAPISTS—
Suggestions as to salary, hours, vacations etc. by the American Physical Therapy Association.

INFORMATIONAL BRIEFS ON SCHOOLS OF PHYSICAL THERAPY—
Admission requirements, costs of education and pertinent information on all approved schools.

SECTION ON EDUCATION—
A list of postgraduate programs offered by the approved schools and a list of specialized courses for physical therapists.

RECRUITMENT POSTER—
Attractive, colorful, throw-away bulletin board poster to help vocational guidance and recruiting.

BLUEPRINT FOR CHAPTER RECRUITING ACTIVITIES
Suggestions for recruiting programs listing methods, materials and an outline for a vocational guidance talk.

JOB OF THE PHYSICAL THERAPIST—
A complete description of what the physical therapist does, where he works and how he functions in the professional field as well as what type of individual he is. (Single copies are free to counsellors, libraries and chapters; additional single copies 50c each, 10-25 copies 35c each, 25 or more copies 25c each.)

U. S. ARMY, U. S. AIR FORCE AND VETERANS ADMINISTRATION PAMPHLETS—
Separate folders listing education, employment or service opportunities in each organization.

MEMBERS, STUDENT MEMBERS OF THE ASSOCIATION AND LIBRARIES MAY HAVE ONE FREE COPY OF EACH SCIENTIFIC REPRINT FOR WHICH THERE IS A CHARGE EXCEPT THE SPECIAL ISSUES OF THE REVIEW AND OTHER SPECIAL MATERIALS FOR WHICH A FEE MUST BE CHARGED:

Scientific Reprints

THE PHYSICAL THERAPY DEPARTMENT FROM AN ADMINISTRATOR'S VIEWPOINT—*Joseph Peters* (No charge)

THE DROP PACK FOR MOIST HEAT—*Adeline E. Doing* (No charge)

PHYSICAL THERAPY IN THE EARLY CARE OF COLD INJURIES—*Mary E. Sacksteder, Capt., WMSC* (10c)

THE ROLE OF THE PHYSICAL THERAPIST IN THE TOTAL CARE OF THE CHILD—*Julius B. Richmond, M.D.* (No charge)

POSTURE TRAINING FOR ADOLESCENTS—*Carolyn Bowen* (5c)

TOYS, GAMES AND APPARATUS FOR CHILDREN WITH CEREBRAL PALSY—*Gladys G. Rogers and Leah Thomas* (10c)

ADMINISTRATION OF A COMMUNITY REHABILITATION CENTER—*Hazel E. Furscott* (10c)

WHEEL CHAIRS—*George G. Deaver, M.D.* (5c)

REHABILITATION OF THE HEMIPLEGIC PATIENT—*Donald A Covalt, M.D.* (5c)

PHYSICAL THERAPY HOME CARE PLAN: ORANGE COUNTY (CALIFORNIA) HEALTH DEPARTMENT *Edward Lee Russell, M.D., and Helen Haiber* (5c)

THE MEASUREMENT OF JOINT MOTION—*Margaret L. Moore* (15c)

PHYSICAL THERAPY IN THE PRENATAL PROGRAM—*Gillian Griffith Smith* (5c)

ROLE OF PHYSICAL THERAPY IN CARE OF PSYCHIATRIC PATIENTS—*Lola E. Smith* (5c)

METHODS OF CLINICAL INSTRUCTION IN PHYSICAL THERAPY—*Beatrice E. Whitcomb, Capt., WMSC* (10c)

Special Materials

BIBLIOGRAPHY ON NATURAL CHILDBIRTH (10c)

READING REFERENCES FOR ELECTRICAL DIAGNOSIS AND ELECTRICAL STIMULATION (10c)

FILM LIST OF SPECIAL INTEREST TO PHYSICAL THERAPISTS AND STUDENT PHYSICAL THERAPISTS

These films may be secured on rental, loan or sale depending on the course. Unless otherwise specified, all films are believed to be 16 mm. (15c)

POLIO ISSUE OF THE *Review* (JULY 1951)—

Contains eight articles by leading physicians and physical therapists. There are thirty-one abstracts from current medical journals. (50c)

SPECIAL FUNCTIONAL ISSUE OF THE *Review* (NOVEMBER 1949)—

Contains eight articles by leading physicians and physical therapists on functional training, crutch walking and wheel chairs. There are twenty-six abstracts of articles on functional training from current medical journals. (50c)

CEREBRAL PALSY ISSUE OF THE *Review* (FEBRUARY 1952)—

Contains six articles by outstanding experts in the field of cerebral palsy. (50c)

PHYSICAL THERAPY IN THE HOME—*Arthur L. Watkins, M.D.* (5c)

PHYSICAL THERAPY IN STATE CRIPPLED CHILDREN'S PROGRAM—*Clara M. Arrington* (5c)

THE USE OF LEAD-UP FUNCTIONAL EXERCISES TO SUPPLEMENT MAT WORK—*Morton Hoberman, M.D., Erbert F. Cicenia, Hyman L. Dervitz and Oscar C. Sampson* (10c)

ADJUSTABLE, COLLAPSIBLE PARALLEL BARS—*Helen C. Coburn and Margaret Hukill* (5c)

THE REHABILITATION OF APHASICS—*Dorothy Britton* (10c)

PHYSIOLOGY OF THE HEART AND CIRCULATION AND ITS CLINICAL APPLICATION IN PHYSICAL MEDICINE—

A bound edition of the papers presented in a symposium at the 1950 annual conference of the American Physical Therapy Association with introduction by Harry D. Bouman, M.D., Coordinator. ($1.00)

ESSENTIALS OF A HOSPITAL DEPARTMENT—PHYSICAL THERAPY—

This manual is designed to supply broad guidance in planning, installing, equipping and administering a physical therapy department in a hospital. Compiled by experts in many fields and published by the American Hospital Association. (25c to members) ($1.00)

PLAN AND SPECIFICATIONS FOR AN ALL-WELDED STEEL TREATMENT POOL (No charge)

ORGANIZATIONAL GUIDE FOR SCHOOLS OF PHYSICAL THERAPY—

Gives a broad interpretation of the essentials of a physical therapy school as established by the Council on Medical Education and Hospitals of the American Medical Association. (No charge)

All requests should be addressed to American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

Abstracts

The Present Obligation of Physical Medicine and Rehabilitation

George Morris Piersol, M.D., Philadelphia, Pa. In JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 147:12:1093, November 17, 1951.

It is only within the recent past that the field of physical medicine and rehabilitation has been given long overdue recognition as an accredited medical specialty. Such recognition, gratifying as it is, carries with it increased responsibilities and definite obligations. The obligations which physical medicine must meet fall into two categories: (1) those of immediate concern, the result of present circumstances, and (2) long range obligations which have developed insidiously, are of indefinite duration, and continuously tax us.

The obligations of physical medicine are not limited to the circumstances that have grown out of what we hope is a temporary situation. As the life expectancy in the United States is increased, and more people survive to old age, the greater becomes the incidence in our population of chronic degenerative diseases. Since physical medicine, as presently understood, offers the most rational approach to the management of this group of individuals, physiatrists will be called upon more and more to care for the chronically ill. The obligations of physical medicine arising from the care of our civilian population are not limited to the treatment and reeducation of the chronically ill. To that load must be added the stupendous number of those injured in accidents that annually place such a huge medical and economic burden upon our nation. It is generally admitted that the civilian needs for physical therapists and physicians qualified in physical medicine far exceed those of the governmental agencies.

The solution of this problem may be stated in the single word "education." Broadly considered, the word implies arousing among physicians, students of medicine, and the public an interest in, and appreciation of, the requirements and potentialities of broad, well integrated reconditioning programs.

Certification in physical medicine, as in every other specialty, is becoming more and more a necessity as governmental and private agencies continue to insist upon it as a prerequisite to responsible professional positions. If the number of physicians who become certified each year does not show a prompt and considerable increase, it will be a long time before we can hope to meet the demand for certified physiatrists.

The first remedial step is to expand in our undergraduate medical schools the teaching of physical medicine. In order that education in physical medicine should continue, a tour of duty in that department should be made a part of the training program of every intern. More familiarity with physical medicine will encourage interns to seek residencies in this field.

An effort has been made in this discussion to indicate some of the obligations which face physical medicine. The underlying problems involved are many and complicated. Their solution is difficult and will require time, wisdom, and well directed effort. The record of our past accomplishments leaves no doubt but that the present and future obligations of physical medicine will be met successfully.

Combined Bone and Nerve Injuries

William J. Tobin, M.D. In THE MILITARY SURGEON, 109:5:621, November 1951.

This paper is concerned primarily with the reconstructive phase of the surgical treatment of cases of combined nerve and bone injuries. In the type of cases discussed, it is assumed that infected wounds have healed, adequate skin coverage has been attained, and so forth.

Those cases of peripheral nerve lesions associated with fractures constitute by far the majority requiring the cooperation of the neurosurgeon and the orthopedic surgeon. Many of these cases are admitted wearing plaster casts on the involved extremity. Upon removal of the cast, very few are ready for their definitive surgery. An unavoidable handicap from the surgical viewpoint is cast stiffness of muscles, ligaments and joints due to the prolonged immobilization incidental to the treatment of the fracture. Physical therapy in the form of massage, radiant heat, active and passive motion, is a valuable asset in preparing these patients for their definitive surgery. Both the soft tissues and bones in these cases show a disuse atrophy of varying degrees. Mobilization of the extremity as much as possible, depending on the nature of the fracture, and early physical therapy improve the general condition of the extremity and further insure a better postoperative result. Occupational therapy with its emphasis on active motion is a valuable adjunct in improving these cases. This is particularly useful in the hand where stiffness of the small joints is marked and at times resistant to treatment. Mechanical supportive measures such as cock-up splints for wrist drop from radial nerve paralysis and some type of a drop foot brace for peroneal nerve paralysis should be used whenever indicated. Highet emphasizes the importance of splinting paralyzed muscles to prevent stretching. When reinnervation does occur in a stretched muscle, there is less functional recovery than in a protected muscle. However, over-splinting by rigid, immovable splints is more harmful than no splinting at all. The splint should be one that can be removed to permit proper physical therapy and occupational therapy.

Early mobilization of joints is an essential preliminary step in the treatment wherever and whenever possible. For facility and comfort in transportation, plaster casts are unquestionably indicated and necessary. Too often, however, plaster immobilization is permitted to remain on the extremity longer than is really necessary. In femoral shaft fractures, the cast should be removed on admission and the extremity put up in a balanced type of traction with or without skeletal traction as the nature and status of the fracture demand. The same principle applies in upper extremity fractures.

Bilateral Ulnar Nerve Palsy as a Result of Pressure Phenomena

Jose Saez, M.D., and Irwin D. Stein, M.D., New York. In ARCHIVES OF INTERNAL MEDICINE, 88: 4:512, October 1951.

Isolated peripheral nerve paralysis is common and is most frequently caused by trauma. Multiple peripheral nerve lesions, particularly when symmetrical, are generally ascribed to the effects of some toxin or systemic disease, such as alcoholism, diabetes, or a demyelinating process or virus infection of the central nervous system. In the case described

in this report, the initial impression of the ulnar nerve palsy, which appeared bilaterally and simultaneously, was that it was a cervical lesion, either in the spinal cord or in the vertebral column. However, roentgenograms of the elbows revealed peculiar bony deformities. The discovery of these bony deformities led to the belief that in some manner they were connected with the appearance of the paralysis.

The patient was twenty-five years of age. His complaints were numbness, tingling, weakness, and atrophy in the distribution of the ulnar nerve of each hand. At the age of twelve the patient had fallen against a fence and his right elbow had been injured. Three weeks later he fell from a chair and struck a table with his left elbow. After thorough examination, exploration and transposition of the right ulnar nerve was undertaken. When the patient soon began to manifest improvement in sensation and to have better use of his right hand, an operation was performed on the left ulnar nerve. The postoperative course was uneventful, there being rapid and striking improvement in both motor and sensory function. About six weeks after operation, the left hand was practically normal, except for slight diminution in sensation to touch in the fifth finger and along the outer aspect. On the right side, sensory function was gradually returning, but there was still weakness of the interossei and the adductor of the thumb. Throughout the entire postoperative period the patient was treated by means of electrical stimulation and active use of his fingers and hands in physical and occupational therapy.

It is known that injuries in the region of the elbow joint are prone to result in ulnar nerve palsies, but why these should appear bilaterally and simultaneously with such a long latent period between injury and appearance of the paralysis is the chief point of this discussion. The trauma thirteen years before had resulted in either a true fracture or slipping of the olecranon epiphysis. It is at about twelve years of age that these epiphyses become united to the shaft. The abnormal shortening of the olecranon process and the identical appearance of the accessory ossicles and their location in respect to the elbow joint are much more in favor of the latter possibility. Although the appearance and location resemble that of patellae cubitorum, which are congenital anomalies, the trauma and the inflammatory reactions that followed the original injuries are against such a diagnosis.

Regardless of the disputed origin of the bone fragments, it seems that the ulnar nerve, which is anatomically in a vulnerable position, was left even more unprotected than usual and that the fragments were displaced into a position over the ulnar grooves optimum for exerting pressure. One more link in the chain of coincidence was the change in occupation of this patient from naval duty to a type of student life which introduced pressure on the elbows for seven to eight hours a day. This, the authors feel, was the deciding factor in the production of the unusual bilateral and simultaneous paralysis of the ulnar nerves.

Recent Developments in Pool Therapy at Droitwich Spa

H. L. Milles, M.A., M.R.C.P. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 14:11:249, November 1951.

The main purpose of this article is to evaluate one of the most useful qualities of brine, namely, its buoyance. The methods of using this unique property to the best advantage are discussed, though its possibilities are still being explored.

It is evident that many advantages arise from the buoyancy of the brine; for instance, the severely crippled or paralyzed patient is fully supported and can be moved into position with ease, thus saving much time and work for both the physical therapist and patient. Furthermore, the complete support of the body, resulting in relaxation, facilitates instruction in both assistance and resistance exercises, and widens the scope of muscle reeducation. All these various possibilities are still being developed, and recently a bay has been built in the Brine Swimming Pool where the physical therapist can handle the patient without entering the brine, and has full control of their movements while instructing them in suitable exercises. When his progress is satisfactory, the patient can continue in the general swimming pool. Bedridden patients can make their preliminary attempts at walking by the support of the brine, if necessary between parallel bars, their progress being so arranged and graded that they can very gradually support more of the body weight as they move into shallower brine.

For shoulder-joint movements the patient is fixed to a seat which can be altered in height. Wall-bars add further to converting the pool into a water gymnasium.

Further progress of the patient is supervised in the "dry" gymnasium, and particular emphasis is laid on simple home exercises. Furthermore, a list of home tips for the handicapped is available, and it is hoped that at an early date a series of demonstrations of various "aids" will be arranged.

Spa Treatment—Its Relation to Medical Rehabilitation

R. A. Lockwood, M.C.S.P., Buxton. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 14:11:255, November 1951.

Although there is nothing new or mysterious about the beneficial effects of treatment at a spa, their use should not be forgotten or ignored by those giving physical treatments. The major British Spas are making a serious and useful contribution to general health and to those in need of rehabilitation in particular.

The aims of spa treatment generally may be summarized as follows:

(1) Placing the patient in the most favorable environment for treatment and thus counteracting adverse psychological influence.

(2) The removal of waste products due to faulty metabolism or infective processes through the bowels, kidneys or skin.

(3) The acceleration of the interchange between blood and tissue fluids by stimulating the circulation of blood and lymph.

(4) Improving metabolism so as to secure increased resistance to infection.

(5) Breaking down fibrous adhesions—dispersing thickenings in the muscles, tendons and joints.

(6) Increasing, where possible, range of joint movement and reeducation of muscle power and control.

These aims will be recognized as being eminently suitable for the treatment of the rheumatic group of diseases, but are equally applicable to other conditions such as poliomyelitis, postoperative and orthopedic conditions, and the after-effects of joint, bone and muscle trauma.

A wide range of known physical treatments is used at all spas, and after diagnosis a treatment plan

should be drawn up having regard to the physical, radiological and pathological findings, and the object in view. It is usual for a patient to be prescribed hydrotherapy and physical therapy treatments on alternate days, together with interspaced recreational, occupational and diversional therapy.

It is the type of physical treatment classed as hydrotherapy which is not too well known to physicians and physical therapists, and which, in a large proportion of patients, is responsible for improvement. Quite often patients have received extensive massage, heat and electrotherapy, either as inpatients or outpatients at their local hospitals before they are sent for treatment of the spa type.

Some of the principal baths or forms of balneotherapy used are: immersion, aerated, douche massage, undercurrent douche, vapour, peat packs and baths, deep pool and therapeutic pool. Packing in towels, sheets and blankets forms an important part of the treatment.

It is possible in a short article to deal with only a few of the many types of hydrotherapy used. The spa regimen—or as it must now be called, spa rehabilitation—utilizes all the forces that nature and man can provide.

It is the combination of these factors which enables the physical therapist to achieve, objectively and subjectively, so much more than physical therapy alone.

Roentgen Therapy in Bursitis of the Shoulder: An Analysis of Fifty Cases Using Both Deep and Superficial Techniques

C. M. Witt, M.D., St. Louis, and P. F. Titterington, M.D., St. Louis. In THE JOURNAL OF THE MISSOURI STATE MEDICAL ASSOCIATION, 48: 11:870, November 1951.

This paper presents the results of fifty consecutive cases of subacromial bursitis. All of the patients represented here are those in whom adequate statistical data was available to evaluate the immediate response to roentgen therapy. Efforts were made to evaluate only the degree of relief of pain since this was the primary aim of treatment. All were patients referred to the authors, as radiologists, for treatment, and all were treated as outpatients. The patients then returned to the referring physician for follow up care if any was needed.

Many forms of therapy have been used in the treatment of bursitis. These include procaine injection, physical therapy in many forms and even a variety of drugs including neostigmine. Some authors have stressed physical therapy during roentgen therapy, to include manipulation under anesthesia, or to follow the relief of the initial pain by roentgen therapy or by other means, with physical therapy.

Roentgen therapy has long been recognized as a valuable method in the treatment of bursitis. This therapy is more effective in acute bursitis than in chronic disease. Of the former, 96.2 per cent obtained good results; of the latter only 85.8 per cent. There were many more treatment failures in the chronic group.

There would appear to be little significant difference in the use of deep and superficial roentgen therapy, provided adequate penetration is used to reach the site of the disease.

Theory of Reflex Controls to Explain Regulation of Body Temperature at Rest and During Exercise

H. C. Bazett, Philadelphia, Penna. In JOURNAL OF APPLIED PHYSIOLOGY, 4:4:245, October 1951.

The apparently paradoxical relationships of the mechanisms of temperature regulation at rest in a warm environment are contrasted to those during work. The first condition imposes its load as heat of external origin, the second that of internal origin. At rest as the ambient temperature rises, the first line of defense against overheating is the change occurring in the peripheral blood flow. Sweating does not supervene until the skin temperature normally reaches roughly 34.5 C. During work, such as exercise, sweating occurs at variable, even relatively low, skin temperatures. The skin temperature during work is closely related to the environmental temperature and is regulated by sweating in spite of a rectal temperature which rises in direct proportion to the intensity of the work. The problem lies in the need for an adequate explanation of the afferent stimulus for sweating. The second aspect of the problem lies in the accounting for such a regulation of rectal temperature by dermal sensory receptors apparently prone to adaptation. This difficulty is dealt with by a consideration of the probable spread of thermal charges to involve other adjacent vascular and receptor pathways.

The evidence and logic are recounted which led the author to believe that reflex responses to both heat and cold exist and that the dermal receptors mediating these reflex responses are stimulated by temperature gradients.

The established superficial receptors for heat and cold (Ruffini's and Krause's respectively) lie adjacent to and likely between venous and arterial plexuses. The author cites evidence for his belief that a second heat receptor lies deeper at the level of the subcutaneous junction. This receptor, he postulates, lies in the same relationship with respect to deeper adjacent arterial and venous plexuses. It has been shown that marked temperature differences may exist between arterial and venous blood which would affect changes in the thermal gradients adjoining these vessels. The superficial heat receptors and their adjacent vessels are affected mainly by external heat, the deeper ones by internal heat from working muscles.

The theory assumes that the superficial heat receptor is concerned with vascular readjustments induced by external heat and that the deeper heat receptor is concerned with sweating and is stimulated readily by internally produced heat. The apparent relationship of sweating to skin temperature, the author believed, is due to thermal gradients. The relationships of blood flow and temperature affecting these changes in exercise and at rest are discussed. Based upon such a hypothesis, the author believed that sweating rates could be predicted over a wide range of environments and metabolic rates.

Physical Medicine in Flexion Deformity of the Knee Joint

Louis N. Rudin, M.D., and Daniel J. Cronin. In ARCHIVES OF PHYSICAL MEDICINE, 32:11:729, November 1951.

Many patients are referred to the physiatrist for correction of flexion deformity of the knee joint. In most cases this serious functional disability can be prevented. With both knees involved, the patient is confined to a wheel chair existence.

When unilateral, the patient is able to ambulate only with the aid of crutches, using a swing through gait, which requires more than average development and strength in the muscles of the upper extremities and shoulder girdles.

In order to prevent flexion deformity of the knee, any patient with a disability around or of the knee must be told that flexion contracture is a possible serious complication. He must cooperate and not keep the knee in flexion and not put pillows under the knee. In some patients a posterior splint may be required to insure that the knee is kept in extension. Nurses and ward attendants must be instructed against making the patient comfortable by any means which cause constant flexion of the knee.

Once a contracture has developed, physical medicine management should consist of:

(1) Heat-whirlpool baths, at temperature of 103 to 105 F. It is preferable to immerse the patient up to the waist in the leg whirlpool. Active underwater exercises should be done by the patient.

(2) Electrical stimulation of the quadriceps. This should be done with the surging faradic current, for fifteen minutes, two or three times daily. Sinusoidal current (direct, surging, interrupted, with alternate polarity), 350 cycles per second, about 18 to 20 surges per minute also may be used.

(3) Muscle setting exercises to the quadriceps, starting with 15 to 20 contractions every hour and increasing to tolerance.

(4) Active, assistive motion to the knee joint, and passive stretching of the contracted hamstrings, manually, and through weights. In severe cases, in spite of judicious efforts, only a slight increase in extension will be accomplished and a traction apparatus not fixed to the bed must be used.

Observations Regarding Physical Agents in Respiratory Tract Infections

J. Wayne McFarland, M.D., Washington, D. C., and H. James Hara, M.D., Los Angeles, Calif. In ARCHIVES OF PHYSICAL MEDICINE, 32: 11:708, November 1951.

In the past few years numerous good articles have been written regarding the normal and abnormal physiology of the respiratory tract, adding greatly to the knowledge of what occurs in the individual who succumbs to an acute respiratory infection. This has supplied the field of physical medicine with some of the finest evidences we have for the use of physical measures in treating the common cold, pharyngitis, tracheo-bronchitis, and pneumonitis.

The answer to acute coryza is education of the public in the necessity of proper home humidification. This is preventive physical medicine in which physiatrists should have a vital interest. Once acute coryza has developed, certain physical measures can be of real benefit, such as mild heat applied to the sinus area. If the heat is mild moist heat in the form of steam inhalations, so much the better, for this supplies not only heat but moisture as well. Diathermy produces heat that is even more penetrating, but should be used in cases of acute sinusitis only after a suitable vasoconstrictor has been instilled into the nostrils, otherwise drainage will not occur and actual harm may result. Should an acute coryza episode involve more than the nose and include also the pharynx, the use of hot saline irrigations to the throat is of value.

In those individuals who are frequent sufferers from head colds or who have chronic sinusitis, we have found that nothing is so valuable in building up a normal vasomotor tone as alternate hot and cold sprays. Since systematic sun bathing is another measure which aids in building up general resistance to infection, it should be added to the list.

In chronic bronchitis, carbon dioxide inhalations and humidified air are of benefit in reducing the cough and tenacious sputum.

The acute and subacute bronchitis which commonly accompanies and follows the common cold usually responds better to diathermy than to any other physical measure. For home treatment, the patient is instructed to use steam inhalations ten to fifteen minutes every two hours, and stay in bed.

For acute laryngitis we have found steam inhalations and/or hot saline irrigations as effective as any procedure thus tried. A heating compress is often applied to the neck at night, using the body's own heat for continuous warmth.

As preventive measures against respiratory tract infection, physical medicine procedures should be stressed to far greater lengths than they are at present. An active program to educate the public on proper air conditioning would be a step forward in this direction.

Post Thoracoplasty Scoliosis

Ralph E. Dwork, M.D., Columbus, Ohio, Harold Dinken, M.D., and Allan Hurst, M.D., Denver, Colorado. In ARCHIVES OF PHYSICAL MEDICINE, 32:11:722, November 1951.

Thoracoplasty is a mutilating surgical procedure leaving in its wake a large ugly scar as well as a sunken chest. An important complication is the scoliosis which accompanies this operation. Most thoracic surgeons have accepted these constant accompaniments to thoracoplasty as inevitable and as a small price to pay to achieve a cure of tuberculosis, although the deformed patient may feel otherwise.

Physical medicine has been employed rather widely, in recent years, in an attempt to prevent, minimize or correct the deformity resulting from thoracoplasty. Many reports indicate the effectiveness of physical agents and technics in attaining these objectives. The early institution of treatment is stressed.

Most programs consist of three phases: first, preoperative orientation of the patient as to the nature of the surgical procedure and its possible sequelae, and instruction in proper bed positioning and early mobilizing exercises to be performed postoperatively; second, treatment postoperatively, between stages, in an attempt to improve bed posture and later sitting posture, mobilize the shoulder girdle and to begin early abdominal exercise routines and diaphragmatic breathing; later, standing and early ambulation with good alignment is stressed. Postural wedge-compression of the thorax, by having the patient lie on wedge pillows or sandbags on the operative side, is widely used. Following completion of the final stage of resection, a graduated program of treatment is instituted, aimed at taking the patient from the bed through the various phases of convalescence to total rehabilitation. The recent use of "resistive exercise" is most interesting, but further observation is needed before final evaluation of its place in treatment is made.

It is fairly obvious, from the literature, that such an approach is highly desirable and effective in preventing noticeable postural abnormalities, "frozen," painful shoulders, deconditioning, and other se-

quelae. It has not, however, been adequately demonstrated by long range, objective studies that conservative treatment by physical means alone is effective in preventing the development of structural scoliosis, which occurs so frequently following extensive thoracoplasty. It is hoped that further studies will shed additional light on this important subject.

Electrodiagnostic and Electromyographic Study of Muscle Denervated by Section of the Anterior Roots

Norman B. Dobin, M.D., and James A. Fizzell, B.S., in E.E. In QUARTERLY BULLETIN OF NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 25:4:338, Winter 1951.

The kinetics of stimulus of a muscle in its normal state as well as in a state of denervation by peripheral nerve section was studied both in man and animals by means of the constant current impulse stimulator and was reported by Pollock and his associates. In these instances of peripheral nerve sections, both sensory and motor supplies to the muscles were interrupted. The present study deals with the kinetics of stimulus of a muscle whose motor supply was interrupted while the sensory supply remained intact. This state was produced in experimental animals (seven cats) by sectioning the anterior roots of the spinal cord supplying the lower extremity while leaving the corresponding posterior roots intact. Observations were then made upon the tibialis anticus muscle over a ninety-day postoperative period with the following results:

The rheobase threshold falls, reaching its lowest level on the twenty-first postoperative day, and then gradually rises but does not reach the original value by the ninetieth day. The chronaxie becomes lengthened. The cathodal tetanus ratio falls and reaches unity on the twenty-first postoperative day. The strength-interval curve for repetitive stimuli of one millisecond duration becomes ascending in the direction of the greater time interval between stimuli, and the thresholds for twitch and tetanus to repetitive stimulation approach equality. The strength-duration curve develops discontinuities as early as the seventh and retains these as late as the ninetieth postoperative day.

Spontaneous fibrillary activity recorded electromyographically is represented by electrical potentials of an amplitude ranging between 25 and 80 microvolts and having durations of 1 to 2 milliseconds.

These findings are considered to be evidence of nerve degeneration and muscle denervation in anterior root sections where it was known that the sensory branches were intact. They parallel the accepted clinical neurological evidence of a lower motor neuron lesion. These findings also parallel the kinetics of stimulus of denervated muscle in instances of peripheral nerve lesions where it is known that both motor and sensory pathways are interrupted.

Crushed Ice Packing in Treatment of Burns

S. E. Flynn, M.D. In CALIFORNIA MEDICINE, 75:73, August 1951. Abstracted in JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 147: 11:1074, November 10, 1951.

Application of packs of crushed ice in the treatment of patients with severe burns was instituted as an emergency measure aboard a Navy vessel in wartime, when 50 patients were extremely burned in explosions of gasoline and other materials during enemy attack. At the outset, standard methods were employed to overcome shock, relieve pain, and prevent dehydration, but materials on hand for these measures were exhausted, and crushed ice was applied to the damaged areas. Shock and pain were immediately relieved, and the patients had a sense of well-being. Glucose and water was given intravenously. Usually, the chilling packs were kept in place for two or three days. With this treatment, pulmonary edema was of lesser incidence; loss of plasma was diminished; and, possibly, the absorption of dead blood cells and tissue cells was retarded and toxemia thereby reduced. It is also possible that the cold lowered the metabolic demands of the lesions, decreased the amount of necrosis, and retarded bacterial growth and sulfate in relieving the pain of burns. The author feels that crushed ice packing should be considered in atomic bomb attacks, which could cause serious burns in so many persons that available physicians, using standard methods, could not cope with the problem.

Vascular Diseases, Evaluation and Treatment of: With Special Reference to Plethysmography

Arthur E. White, B.S., M.D., F.A.C.P., Col., M.C., U.S.A., San Francisco, Calif. In ARCHIVES OF PHYSICAL MEDICINE, 32:11:699, November 1951.

Failure of the cardiovascular system is the most common cause of death in man today, and it is becoming even more important as the life span increases.

The rules for treatment of cardiovascular conditions basically consist of the following:

(1) Conservative treatment should not be carried too far; if administration of Priscoline, tetraethylammonium chloride (Etamon chloride®), other antispasmodic or anticoagulant or if performance of sympathectomy, venous ligation, or nerve section is indicated, the earlier it is done the better the chance of saving the limb.

Plethysmography is particularly suited for making this determination. The degree of spasm can be determined and the amount of total circulation can be measured. Oscillometry and skin temperature determinations cannot give this information.

(2) Tobacco should be eliminated.

(3) Alcohol in the form of spiritous liquors, by mouth, is useful.

(4) Postural exercises and Buerger-Allen exercises are indicated in uncomplicated cases and contraindicated in cases of gangrene or impending gangrene.

(5) The oscillating bed is beneficial in all stages of peripheral vascular diseases of the lower extremities. Mild heat to the abdomen in conjunction with the oscillating bed is advantageous.

(6) Prophylactic and active skin care should be given.

(7) Intermittent venous occlusive therapy is indicated if the smaller arteries are not compressed.

(8) The limb should be properly bandaged if the patient is ambulatory. If surgery is performed on the thrombosed veins of the saphenous system a snug elastic bandage from the toes to the groin is applied right after the operation and worn seventy-two hours. Early and active ambulation is mandatory the very day of the operation to prevent thromboembolic complications.

(9) Diathermy and other reflex dilatation methods are contraindicated in a sympathectomized limb,

since body heating has no effect on the sympathectomized part and the blood is shunted to unsympathectomized area.

(10) Contrast baths are beneficial if properly prescribed and given only in the presence of increased vasomotor tone. If organic pathology is present in the arteries this method of treatment will be of no avail.

The peripheral vascular reactions as observed plethysmographically can serve as an objective and quantitative index to certain psychic states and organic cardiovascular pathology. The potentialities for the development of the interpretative diagnostic value of the plethysmogram, in all cardiovascular conditions, are great.

The Hip Rotator

Guy Beauchamp, M.B., Ch.B. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 14:11:259, November 1951.

A detailed description of a hip rotator is given, with a brief notation of its therapeutic and diagnostic uses.

Although the hip rotator was designed primarily to give resisted exercises for the muscles of rotation, active, passive, resisted and assisted movements also may be given. The hip joint can be rotated and mobilized by manual operation of the metal graduated scale.

The advantages are readily seen. There is no need to undress, which in itself is a great time-saver, and the patients can, if necessary, put themselves on the machine and carry out the movements, while mobilization needs but a few moments of the physical therapist's time at the end of the exercises. The treatment time averages seven minutes.

Limitation in abduction is treated by mobilization of the hip joint in ever increasing degrees of abduction as measured on the scales on the front of the frame of the machine.

Foreign Abstracts and Reviews . . . .

Electrophrenic Respiration

Dr. Jules J. Klain (Abbotterapia No. 10, 1950), Revista De La Sociedad Argentina De Medicina Fiscia Y Rehabilitacion, No. 49-50 Quarterly 1951. *(Translated and abstracted by Erle L. Williams, Head of Physical Therapy Department, John A. Andrew Memorial Hospital, Tuskegee Institute, Alabama.)*

The mechanical methods of artificial respiration that are being used actually are not based on physiological principles and each one (steel lungs, inhalers, etc.) has its disadvantages; neither is comfortable nor allows the conscious patient freedom of movement. Theoretically the ideal method of maintaining artificial respiration would be one which would make the diaphragm contract and expand rhythmically, as it does in natural respiration. This requirement can be found in electrophrenic respiration, even though it presents certain disadvantages. The procedure should be applied only when necessary and in certain conditions.

Since the response of muscles on the stimulation of its nerve supply is in direct proportion to the intensity of the applied intermittent stimulus, application of a continuously varying current to a nerve would result in the contraction and continued innervation of the muscle through the same nerve. This, plus the fact that an electric stimuli applied to a nerve could vary easily in frequency and intensity, would produce artificial respiration by means of direct electric excitation of the phrenic nerve, according to Sarnoff and his co-workers.

The current stimulating the phrenic nerve comes from a stimulating Gras charged to a frequency of 40 impulses by second, and lasting 2 millimeters of a second. The current is supported by a rotating voltmeter which forms a circle whose longitude can be determined by an adjustable bar. This bar is driven to a rhythm that may be adjusted by a depositive clutch. In this manner the charge transmitted to the electrode stimulation is increased and decreased, maintaining the respiration of the subject. The increase of voltage is gradual and produces a uniform contraction of the diaphragm as the voltage decreases; thus, respiration is affected, due to the passive expansion of the diaphragm. The mechanism is sufficiently flexible to allow the adjustment of the volume of "breathing air or current" and minute volume charging the maximum voltage applied to the nerve.

Electrophrenic respiration was first practiced in laboratory animals in which spontaneous respiration was suppressed by injecting procain hydrochlorate at a level of the fourth ventricle.

During the experiment a picture was taken with the pneumatograph. It was shown that with electrophrenic respiration there was a production in volume of respiratory air greater by minute than through spontaneous respiration. The studies of arterial oxygen, in this case, revealed that arterial saturation could be increased over the ordinary level during this procedure. In this same report Sarnoff and his co-workers related that this method, as the only means of artificial respiration, sustained life for a term of 52 hours in a five year old boy with complete respiratory paralysis which followed the breaking of a cerebral aneurism.

Orthopadische Gymnastik (Therapeutic Exercises in Orthopedics). *By Prof. Med. Georg Hohmann and Lina Jegel-Stumpf. Second revised edition. Pp. 124, illus. 202. Georg Thieme Verlag, Stuttgart, 1949. (Translated and reviewed by Signe Brunnstrom, Director of Physical Therapy, Kessler Institute for Rehabilitation.)*

This text book on therapeutic exercises for orthopedic conditions was originally published in 1933 with a new revised edition appearing in 1949. The book contains chapters on kyphosis, lordosis, flat back, scoliosis, knee deformities, flat feet, poliomyelitis, spastic paralysis, circulatory disturbances, and traumatic conditions of the extremities. The illustrations are partially photographs, partially stick figures. Many show rather traditional types of exercises derived, to a large extent, from the Swedish "sick gymnastic" programs. The chapter on scoliosis also contains descriptions of Klapp creeping exercises.

In the treatment of poliomyelitis, the use of continued slow stretching of the shortened muscles by means of weights over pulleys as recommended by Fritz Lange is preferred to any type of vigorous stretching. Muscle training is performed manually or with the limb suspended by means of slings according to Schede. The necessity of exercising a muscle in the overload zone for increase in cross section, as discussed by Willy Lange in 1917, is stressed.

For spastic paralysis, passive shaking of the extremity with simultaneous tension is used (Kohlrausch,

1942), followed by resistive motions both for the spastic muscle groups and for their antagonists, and endurance exercises with music continued beyond the point of fatigue.

At first glance, this book may seem like a rather old fashioned treatise on therapeutic exercises. However, a person who reads the German language will discover many gems in its text. Those who do not read German will find it highly profitable to study the illustrations, particularly in the last chapter, "Functional Disturbances of the Arm and the Leg." The book is obtainable through Grune & Stratton, Inc., Medical Publishers, New York.

Book Reviews . . . . .

Primary Anatomy. *By H. A. Cates, M.B., Professor of Anatomy and Director of the School of Physical and Health Education, University of Toronto. Second edition. Cloth; price, $6.00. 344 pages, 405 illus. The Williams and Wilkins Company, Baltimore, 1951.*

The author in his second edition of this book has made vast improvement over the first edition by including more detailed explanation and devoting more time to some of the systems of the body.

The author purposely has written the book for nonmedical students; namely, nurses, physical therapists, occupational therapists, health and physical educationists, etc. He recognizes that their needs vary, but has attempted "to meet the needs of all without being too burdensome for any." With this in view, no doubt it fulfills the purpose for many such groups. The reviewer feels that the text might serve very well for students preparing to study physical therapy, especially for those who are being introduced to anatomy for the first time. Then, later it could be used as an excellent reference while pursuing the professional study of physical therapy. I say reference, because I feel greater detail is needed in the chapters on muscles and skin for this particular group of students.

It is written in a simple style and interesting manner with numerous excellent schematic drawings, which should be easily understood by those with little background, or by those being introduced to the subject for the first time.

The systemic approach rather than the regional technic is used to give the student a good general idea of the anatomy of the various systems of the body.

The reviewer feels this text is an excellent approach to the study of anatomy for beginners and a worthwhile text for the college student in health education, for the student in the pre-physical therapy or pre-occupational therapy program, and an excellent reference for further professional study.

Chemistry of Muscular Contraction. *By A. Szent-Györgi. Institute for Muscle Research, Woods Hole, Mass. Second Edition. Hard cover. Price, $5.00. Pp. 162, illus. 55. Academic Press, New York, 1951.*

In recent years three structural proteins of skeletal muscle, actin, myosin and their combined form, actomyosin, have become prominent features of theories concerning the transformation of chemical energy to mechanical energy to produce muscle contraction. In this brief book Dr. Szent-Györgi has summarized the important phases of his own and others' work upon these muscle proteins, stating his theories of muscle contraction. As a biochemist he has devoted many years to fruitful study of these proteins and since his contributions have deservedly won the Nobel prize for him, he is an outstanding authority in the field. His approach has been to disintegrate muscle both physically and chemically and then to try to reconstitute muscle step by step. Some of his observations upon rabbit skeletal muscle permit him to generalize about the chemistry of other structures, such as smooth muscle, heart muscle, and viruses, in order to point the way for further investigation. This he does in this book in a thought-provoking and entertaining manner.

The book is so organized that after a first introductory chapter, in which the author sets forth in readily understandable analogies his approach to the problem, there follow sections first devoted to observations and then to hypotheses. In chapters two to four the physical characteristics of muscle are reviewed, especially as observed by means of the electron microscope before and after mechanical disruption by washing and heating. This summary of the physical characteristics of muscle is detailed as far as it goes but is admittedly incomplete, since the author omits observations obtained by X-ray studies. Chapters five to nine review the chemical data obtained from studies of muscle proteins, which have been extracted by various chemical technics and subjected to sundry chemical environments. To understand this portion of the book requires more than a superficial knowledge of chemistry. The observations appear to support the hypotheses that when actin and myosin are brought together in the presence of certain chemicals, especially adenosinetriphosphate and ions, such as potassium, calcium and magnesium, either the two proteins are driven apart and no contraction occurs or the two proteins are brought together resulting in contraction. Which of the two events happens depends upon critical ionic concentrations.

Chapters ten to twelve contain theoretical considerations concerning the source of energy for muscle contraction, correlating chemistry and structure in an attempt to bridge the gap between in vitro findings and in vivo muscle function. The author attacks this formidable task from the standpoint of thermodynamics and energetics and mechanics. The remaining chapters (thirteen to fifteen) are concerned with general theories to explain the function of other structures.

This book is of little practical use to the physical therapist but would be of interest to anyone with more than an elementary background in chemistry. It is well written, indeed, entertainingly written; the data and appendix (containing details of procedures) enable the reader to find material which is scattered throughout a vast literature; the hypotheses are provocative and observations and theories are clearly separated; the bibliography is comprehensive and up to date. All these factors make the reading of this book important to those interested in how muscle contraction is brought about and what factors can alter normal muscle activity.

Wounds of the Extremities in Military Surgery. *By Oscar P. Hampton, Jr., M.D., F.A.C.S., Instructor of Clinical Orthopedic Surgery, Washington University, School of Medicine; Attending Orthopedic Surgeon, Barnes Hospital, St. Louis City Hospital, St. Louis County Hospital and St. Luke's Hospital. Cloth binding. Price, $10.00. Pp. 434; illus. 131. C. V. Mosby Company, St. Louis, Mo., 1951.*

Dr. Hampton is well qualified to produce a reference book of this nature. His background is broad and secure, both in military and civilian medical capacities, and he has drawn selectively from both for his present work. He has succeeded well in his stated purpose: that of providing the new military surgeon with "a reference book that will integrate the exigencies of military surgery with his previous professional experience."

The opening chapters keynote the work with general considerations of military surgery, first aid measures and emergency splinting, initial wound surgery, including preoperative preparation and transportation splinting, and reparative wound surgery. This section explains and justifies the "chain of evacuation" in military surgery, and the reasons for staged surgery, and why there can be no deviation from the established policy, particularly by the forward medical installations.

In the remainder of the book, as the title indicates, the subject matter is primarily concerned with wounds of the extremities. Special injuries are covered by chapter and include vascular and nerve injuries, compound fractures, wounds of the joints, and amputations. Later chapters are concerned with regional injuries: compound fractures of the femur, of the tibia and fibula, of the humerus, radius and ulna, wounds of the foot and of the hand. In addition there is an excellent and welcome chapter devoted to anaerobic wound infections.

The format is pleasing; the type sufficiently large to assure comfortable reading. The plates and illustrations are up-to-date, including many from U.S. Army Medical installations in Korea, and they supplement the text well.

This book should be available to every physician who anticipates active duty with or is currently serving in one of the Armed Forces Medical Services. It will be of interest also to those physicians who are concerned with problems of traumatic surgery and those planning for the management of large scale civilian casualties from any source. Others in allied medical specialties will find much of importance available to them in this volume. For instance, while rehabilitation is not stressed here—as indeed it should not be—people working in that field will profit by a thorough understanding of the previous handling of extremity wound cases as outlined by the author.

F. E. V.

Handbook for Paraplegics and Quadriplegics. *By Alma Frost, a graduate of Hahnemann Medical School of Nursing, and Robert Frost, a USAF quadriplegic veteran. Collection of material and experiences. Cloth; price, $2.00; pp. 57, with 17 illus. Published by Robert Frost, Inc., Tarrytown, N. Y., 1951.*

This fifty-seven page booklet prepared by a quadriplegic and his wife (a nurse) is planned for persons who have recently become disabled and for their families. The explanation of paraplegia and quadriplegia is very superficial and presents nothing new to the physical therapist or to the average patient. The sections on wheel chairs and bracing are reprints of material previously published.

In a discussion of daily activities, the authors have used the Veterans Administration form, and by means of line drawings have illustrated the various activities, and listed the need for each of these activities. The sections on home exercise programs, education, and employment, and on social programs again suffer from the superficiality of approach and if used for patients should be accompanied by further explanations and interpretations by trained personnel.

The sections which would appear to be of greatest value both to patients and to rehabilitation workers, are those on homemade equipment and useful gadgets, methods of assisting the quadriplegic (where these differ from the paraplegic), and the final list of sources of supply for equipment, the state rehabilitation agencies, and Veterans Hospitals caring for paraplegics.

It is apparent that the authors have spent much time and effort in preparing this handbook and they are to be commended. This reviewer feels, however, that the need for continued supervision and training by skilled personnel is not stressed sufficiently, and for this reason would suggest that if this book is advised for any patient the physician or physical therapist working with the patient should indicate the need for continued expert advice as each progressive step is made. As a sourcebook for the physical therapist it can be well recommended.

Rehabilitation Series: No. 3—Leg Amputee. *By Signe Brunnstrom, Director of Physical Therapy, Kessler Institute for Rehabilitation, Consultant in Physical Therapy to the Veterans Administration; and Donald Kerr, Director of Amputee Rehabilitation, Hasbrouck Heights Hospital, Amputee Training Consultant at Kessler Institute. Paper cover. Price, $1.00. Pp. 44, illus. 72. Kessler Institute for Rehabilitation, West Orange, N. J., 1951.*

This book, the third in the Rehabilitation Series published by Kessler Institute, carries on the high standard set by the first two volumes. It is a concise, well illustrated summary of the training of the lower extremity amputee before he is fitted with his prosthesis.

Subject material includes: traction, bed exercises, stump bandaging, use of crutches, care and strengthening of the remaining leg, general conditioning, stump exercises, and a chapter on looking ahead to living with the prosthesis. All sections are well illustrated with photographs, so that the patient will have little trouble carrying out each step of his pre-prosthetic program and setting up the equipment to do this. All apparatus shown in the book can be easily obtained and there are clear directions for its use. After studying the book one should have little trouble setting up a program so that the early amputee can make the best possible use of his time and be physically ready for the day when the prosthesis arrives.

In the last chapter are listed agencies which the amputee may consult for guidance, and there are many practical suggestions to help him cope with problems that will arise as a result of his handicap.

The primary purpose of the book is to serve as a treatment manual for the patient (emphasis is placed on the fact that a doctor's orders must be faithfully followed), but it will prove invaluable to the workers who have to do with his care. Every physical therapist will find the book useful in reviewing exercise programs for the amputee, and it will be a help in improvising home equipment for him.

Schools of Physical Therapy

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS
OF THE AMERICAN MEDICAL ASSOCIATION

Graduates of these schools are eligible for membership in the American Physical Therapy Association.

Name and Location of School	Medical Director and Technical Director	Entrance Requirements	Length of Course	Classes Start	Certificate, Degree, or Diploma
CALIFORNIA					
[1]**Childrens Hospital Society,** Los Angeles (in affiliation with University of California, Los Angeles)	Samuel S. Mathews, M.D. Mary J. Dodge	a[3]-b[3]-d-e g[4]	14 mo 4 yrs	Sept	Certificate Degree
[1]**College of Medical Evangelists,** Loma Linda	F. B. Moor, M.D. R. Wm. Berdan	a-b-c-d-e g	15 mo 4 yrs	Sept	Certificate Degree
[1]**Univ. of So. California,** Los Angeles	Charles L. Lowman, M.D. Charlotte W. Anderson	a-b-d-e g[4]	14 mo 4 yrs	Sept Sept-Feb	Certificate Degree & Cert.
[1]**Univ. of California Medical School,** San Francisco	Lucile M. Eising, M.D. Margery Wagner	d-e g	12 mo 4 yrs	Sept-Feb	Certificate Degree
[1]**Stanford Univ.,** Palo Alto	Wm. Northway, M.D. Lucille Daniels	a-d-e-f g[4]	12 mo 4 yrs	Jan-June or Sept	Certificate Degree
COLORADO					
[1]**Univ. of Colorado Medical Center,** Denver	Harold Dinken, M.D. Dorothy Hoag	a[3]-b-d-e g[4]	12 mo 4 yrs	Sept	Certificate Degree
ILLINOIS					
Northwestern Univ. Medical School, Chicago	Emil D. W. Hauser, M.D. Gertrude Beard	a-b[3]-d-e	12 mo	Oct	Certificate
IOWA					
[1]**Univ. of Iowa,** Iowa City	W. D. Paul, M.D. Olive C. Farr	b-e	12 mo	Sept	Certificate
KANSAS					
[1]**Univ. of Kansas School of Medicine,** Kansas City	Donald L. Rose, M.D. Ruth Monteith	a-b-d-e g[4]	12 mo 4 yrs	Feb-Sept	Certificate Degree
MASSACHUSETTS					
Bouve-Boston School of P.E., in affiliation with Tufts College, Medford 55	Howard Moore, M.D. Constance K. Greene	g[4]	4 yrs	Sept	Degree
Simmons College, Boston	{Wm. T. Green, M.D. {Arthur L. Watkins, M.D. Shirley Cogland	a[3]-b-d-e g[4]	16 mo 4½ yrs	Sept	Diploma Degree
Boston Univ., Sargent College of Physical Education, Cambridge	Kenneth Christophe, M.D. Adelaide McGarrett	a-b-d-e f-g[4]	12 mo 2 or 4 yrs	Sept	Certificate Degree
MINNESOTA					
[1]**Univ. of Minnesota,** Minneapolis	Frederic J. Kottke, M.D. Ruby Green Overmann	d-f-g[4]	2 yrs	Sept	Degree
[1]**Mayo Clinic,** Rochester	Earl C. Elkins, M.D. Darrell Hunt	a-b-c-d-e	2 yrs	Sept	Certificate
MISSOURI					
[1]**Washington Univ. School of Medicine,** St. Louis	Sedgwick Mead, M.D. Beatrice F. Schulz	f-g[4]	2 or 4 yrs	Sept	Degree
[1]**St. Louis Univ. School of Nursing,** St. Louis	A. J. Kotkis, M.D. Sr. Mary Imelda	f-g[4]	2 or 4 yrs	Jan-Sept	Degree

Name and Location of School	Medical Director and Technical Director	Entrance Requirements	Length of Course	Classes Start	Certificate, Degree, or Diploma
NEW YORK					
Albany Hospital, Albany (in affiliation with Russell Sage College, Troy)	John W. Ghormley, M.D. Catherine Graham	a-b-d-e g[4]	12 mo 4 yrs	Sept	Certificate Degree
[1]**Columbia Univ.,** New York	Wm. B. Snow, M.D. Floy Pinkerton	a-b[3]-e f	12 mo 2 yrs	Sept	Certificate Degree
[1]**New York Univ., School of Education,** New York	George G. Deaver, M.D. Elizabeth C. Addoms	a[3]-b[3]-d-e g[4]	12 mo 4 yrs	Sept	Certificate Degree
NORTH CAROLINA					
[1]**Duke Univ., School of Medicine,** Durham	Lenox Baker, M.D. Helen Kaiser	a[3]-b[3]-d-e	15 mo	Oct	Certificate
OHIO					
[1]**Cleveland Clinic,** Cleveland	Walter J. Zeiter, M.D. Mildred Heap	a-b-d-e	12 mo	Oct	Certificate
PENNSYLVANIA					
[1]**D. T. Watson School of Physiatrics,** Leetsdale	Jessie Wright, M.D. Kathryn Kelley	a[3]-b[3]-d-e	12 mo	Oct	Diploma
[1]**Univ. of Pa. School of Auxiliary Med. Serv.,** Division of Physical Therapy, Philadelphia	George M. Piersol, M.D. Dorothy Baethke	e g[4]	12 mo 4 yrs	Sept-Feb Sept	Certificate Cert. & Degree
TEXAS					
[1]**Hermann Hospital,** Houston	Oscar O. Selke, Jr., M.D.	a-b-d-e	12 mo	Oct	Certificate
[1]**Univ. of Texas School of Medicine,** Galveston	G. W. N. Eggers, M.D. Ruby Decker	a-b-e d	12 mo	Jan	Certificate Degree
VIRGINIA					
[1]**Med. College of Va.,** Baruch Center of Phys. Med., Richmond (in affiliation with Richmond Prof. Inst.)	Walter J. Lee, M.D. Susanne Hirt	a-b-d-e g[4]	12 mo 4 yrs	Sept	Diploma Degree
WISCONSIN					
[1]**Univ. of Wisconsin Med. School,** Madison	Harry D. Bouman, M.D. Margaret Kohli	a-b-c-e-f g[4]	12 mo 4 yrs	Sept Sept-Feb	Certificate Cert. & Degree
U. S. ARMY MEDICAL SERVICE					
(a) **Medical Field Service School,** Brooke Army Medical Center, San Antonio, Texas, and	Charles D. Shields, Lt. Col., M.C. Agnes P. Snyder, Major, WMSC	b-e	12[2]	Mar-Sept	Certificate
(b) **Fitzsimons Army Hospital,** Denver, Colorado	H. B. Luscombe, Col., M.C. Harriet S. Lee, Major, WMSC	Completion of Medical Field Service School			
(c) **Walter Reed Army Hospital,** Washington, D. C.	John H. Kuitert, Lt. Col., M.C. Brunetta Kuehlthau, Major, WMSC	Completion of Medical Field Service School			
(d) **Letterman Army Hospital,** San Francisco	Raoul C. Psaki, Lt. Col., M.C. Emma T. Harr, Major, WMSC	Completion of Medical Field Service School			

Entrance Requirements

FOR ONE-YEAR COURSE

a = Graduation from accredited school of nursing.
b = Baccalaureate degree with major in physical education.
c = Two years of college with science courses.
d = Three years of college with science courses.
e = Baccalaureate degree with required science courses.

FOR TWO-YEAR COURSE

f = Two years of college with science courses.

FOR FOUR-YEAR COURSE

g = High school graduation.

Footnotes

[1]Male students admitted.

[2]12 months' course includes training at the Medical Field Service School and Fitzsimons, Walter Reed, or Letterman Army Hospitals. Apply directly to the Surgeon General, Department of the Army, Washington 25, D. C.

[3]Additional college science credits required.

[4]Advanced standing students accepted.

Please address initial correspondence to the School of Physical Therapy in the institutions listed. Tuition and fees will vary from school to school.

Our Book Reviewers for March

Stella Botelho, M.D., Associate in Physiology, University of Pennsylvania Graduate School of Medicine, Philadelphia.

Adeline B. Gauger, M.D., Baruch Fellow in Physical Medicine, Columbia-Presbyterian Medical Center, New York.

Mary E. Callahan, Associate Director of Training Courses for Physical Therapists, College of Physicians and Surgeons, Columbia University.

Classified WANT-ADS

WANTED: Qualified physical therapist for work in Cerebral Palsy Treatment Center. Scholarship available for additional training in C.P. Attractive salary. Good working conditions. Directed by Diplomate, American Board of Phys. Med. Write H. L. Rudolph, M.D., 400 N. 5th St., Reading, Pa.

WANTED: Two qualified physical therapists, for large teaching general hospital with progressive Physical Medicine and Rehabilitation Department, treating all types of patients, both children and adults. Living facilities near hospital. For further information write Thomas F. Hines, M.D., Director, Physical Medicine and Rehabilitation, P.O. Box 1001, New Haven, Conn.

WANTED: Physical therapist, licensed or eligible for license in Penna. to develop educational and advisory service for the cerebral palsied in Philadelphia area. A new project offering oppprtunities limited only by ability of therapist. Varied training and experience in cerebral palsy field essential. Write Cerebral Palsy Society of Phila., 4 S. 15th St., Phila. 2, Pa.

WANTED: Qualified physical therapist, male or female. Good starting salary with scheduled salary increases for a five-day, 40-hour week. Liberal sick leave and vacation privileges. Retirement plan. Apply to H. G. Alexander, Asst. Supt., Cincinnati Gen. Hospital, 3231 Burnet Ave., Cincinnati 29, Ohio.

PHYSICAL THERAPIST with wide experience needed to establish Department of Physical Therapy in hospital in Brazil. Foreign language not required. Minimum contract for one year. Transportation as well as adequate salary for qualified therapist. Inquiries should be sent to the American Physical Therapy Association, 1790 Broadway, New York, N. Y.

POSITIONS AVAILABLE for qualified physical therapists. Excellent beginning salary. Employees receive annual paid vacations and automatic salary increases, and participate in a liberal retirement plan. For application or information write the Wayne County Civil Service Commission, 2200 Cadillac Tower, Detroit 26, Michigan.

WANTED: Physical therapist for position of Chief of Department in a recently established Curative Workshop. New building, fully equipped. Excellent opportunities for advancement. Apply to G. Margaret Gleave, Executive Director, the Curative Workshop of Racine, 2335 Northwestern Avenue, Racine, Wisconsin.

WANTED: Qualified physical therapist, 500-bed general hospital. Good salary, 28 vacation days, 5 legal holidays, two weeks sick leave. Write Miss Betty Baell, Physical Medicine Department, University Hospital, Augusta, Georgia.

WANTED: Physical therapist for 150-bed general hospital. Salary open. Pleasant working conditions. Department supervised by Diplomate in Physical Medicine and Rehabilitation. Write Dr. Herman Rudolph, Community General Hospital, Reading, Pa.

WANTED: Physical therapist with experience, especially in corrective exercises for arthritis patients. Must be willing to do part time office work. Forty-hour week. Phone or write TEmpleton 8-0830, 580 Park Avenue, New York City. Doctor E. F. Hartung.

WANTED: Female physical therapist, Assistant. Fully equipped department, 275-bed hospital. Please write giving age, qualifications, picture and date available. Lima Memorial Hospital, Lima, Ohio.

RATES

The rate per insertion is 75c per line. Typewrite your advertisement carefully and count 30 characters and spaces per line.

ALL WANT-ADS MUST BE PAID FOR IN ADVANCE. Make checks or money orders payable to the American Physical Therapy Association.

Institutions or physical therapists who do not wish their identity known may arrange for Blind Ad Code No. All such want-ads must include the following which will be counted as 2 lines:

Address replies to ..... care of **The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.**

It is requested that descriptive adjectives be used instead of actual figures when referring to salary.

IMPORTANT

It is understood and agreed that the publisher shall have the right to reject or change the wording of any advertisement which in the opinion of the Editorial Board shall not be in agreement with the ethical standing of this publication; the advertiser agreeing that the Editorial Commitee shall be the sole and exclusive judge of the acceptance of any advertisement.

DEAD LINE

Copy for want-ads must be submitted to the American Physical Therapy Association by the 1st of the month **PRECEDING MONTH OF ISSUE.**

Missouri

Eastern Missouri:
President, Lorraine Lake, 5534 Cates Ave., St. Louis 12, Mo.
Secretary, Mrs. Ruth Benz, 2919 Forrest Dr., Alton, Ill.
Western Missouri:
President, LaVerne McNabb, 610 Orient Dr., Kansas City, Kans.
Secretary, Mrs. Gloria Morton, 148 Pawnee, Lawrence, Kans.

Montana

President to be appointed
Secretary, Dora Dykins, 214 Hawthorne Ave., Lewistown

Nebraska

President, Mrs. Mary Lindhall, 3604 Grant St., Omaha
Secretary, Mrs. Betty Soder, 611 N. 42 St., Omaha

New Hampshire

President, Ruth Murray, River Rd., Penacook
Secretary, Mary Bullock, R.F.D. #4, Concord

New Jersey

President, Marie Heghinian, 307 Fairmount Ave., Jersey City 6
Secretary, Jean Smith, 294 Montgomery St., Bloomfield

New Mexico

President, Mrs. Margaret B. Evanko, Lovelace Clinic, Albuquerque
Secretary, Hilda Voetberg, 58 S. Federal Pl., Santa Fe

New York

Central New York:
President, Donald McCuen, 101 Downing Rd., DeWitt
Secretary, Theodora White, 93 Hartford Terrace, New Hartford
Eastern New York:
President, Elizabeth Ammerman, 1168 Glenwood Blvd., Schenectady 8
Secretary, Betty Nichols, 30 Front St., Schenectady
New York Chapter:
President, Elizabeth Addoms, 1 Clark St., Brooklyn 2
Secretary, Stacy Psychoyos, 616 E. 26 St., Brooklyn 10
Western New York:
President, Verona Blair, 34 Milton St., Williamsville 21
Secretary, Dorothy Shaw, 333 Ashland Ave., Buffalo

North Carolina

President, Edna M. Blumenthal, North Carolina Cerebral Palsy Hospital, Durham
Secretary, Mrs. Sally M. Lowe, Rex Hospital, Raleigh

Ohio

President, Sarah Martz, V.A., Cuyahoga Bldg., Cleveland 14
Secretary, Lucy Jones, Crile V.A. Hospital, Cleveland

Oklahoma

President, Mary E. Rexroad, 1423 N.W. 28, Okla. City
Secretary, Stella Spaulding, 6500 E. 11 St., Tulsa

Oregon

President, Mercedes Weiss, 2134 S.E. 57 Ave., Portland
Secretary, Elizabeth Fellows, 1535 S.W. 11 Ave., Portland Rehab. Center, Portland

Pennsylvania

President, Bessie D. Johnson, 2 E. Mercer Ave., Havertown
Secretary, Helen F. Snelbaker, 1311 Finance Bldg., Philadelphia 2
Western Pennsylvania:
President, R. Lewis Brown, 37 Florence Pl., Pittsburgh 28
Secretary, Martha Wratney, 1317 Iten St., Pittsburgh 12

Puerto Rico

President, Priscilla Jusino, 651 Miramar Ave., Stop 11, Santurce
Secretary, Alice Torres-Bulls, Box 1927, San Juan

Rhode Island

President, Helen Babcock, 12 Portland St., Providence
Secretary, Frances Roots, 81 Brown St., Providence 6

South Carolina

President, Margaret W. Graydon, Columbia Hospital, Columbia
Secretary, Mrs. Winifred Werry, King & Wilmington, Beaufort

South Dakota

President, Carol Spensley, c/o P.T. Dept., Royal C. Johnson Mem'l Hosp., Sioux Falls
Secretary, Katharine J. Gale, 222 N. Grange, Sioux Falls

Tennessee

President, Deborah Kinsman, 3608 Brighton Rd., Nashville
Secretary, Mrs. Helen T. Nail, State Health Dept., 420 6 Ave. N., Nashville

Territory of Hawaii

President, Henry N. Thompson, Jr., Kauikeolani, Children's Hosp., 226 N. Kuakini St., Honolulu 17
Secretary, Arloa Ridder, Queen's Hosp., P.O. Box 614, Honolulu 9

Texas

President, Martha Schmalenbeck, Gonzales Warm Springs Foundation, Gonzales
Secretary, Gladys P. Swayze, 827 Rutland, Houston 7

Utah

President, Robert G. Green, 981 S. 10 E. St., Salt Lake City
Secretary, Mrs. Johnell Yurka, 2623 Alden, Salt Lake City

Vermont

President, Margaret Corbin, Mary Fletcher Hosp., Burlington
Secretary, Veronica Cullinan, 159 S. Union St., Burlington

Virginia

President, Susanne Hirt, P.T. School, Med. College of Va., Richmond
Secretary, Sarah Jean Smith, 3107 Stonewall Ave., Richmond

Washington

President, Carolyn Bowen, 8623 41 St., S.W., Seattle 6
Secretary, Barbara Fassett, 109 Crocket St., Seattle 9

West Virginia

President, Mrs. Marguerite C. Rukse, Box 85, Amherstdale
Secretary, Mrs. Georgia Traub, Morris Memorial Hosp., Milton

Wisconsin

President, Norma M. Grundemann, 3617 N. 13 St., Milwaukee 6
Secretary, Alice Butler, Physical Therapy Dept., V.A. Hospital, Madison

Chapter Directory

Alabama

President, George Beni Arnold, 121 S. Ann St., Mobile 20
Secretary, Kay Carr, 325 41 St., Fairfield

Arizona

President, Mrs. Mary T. Lyons, 1948 E. 7 St., Tucson
Secretary, Margaret Curry, 334 E. Lee St., Tucson

Arkansas

President, Geraldine Larson, 2112 Riverview, Little Rock
Secretary, Ewing Guthrie, 314 N. Spruce, Little Rock

California

Northern California:
President, Maxine Schuldt, 1680 Mission St., San Francisco
Secretary, Mrs. Margaret B. Farley, 2620 McAllister St., San Francisco
San Diego
President, C. Ruth Campbell, 1410 Fort Stockton Dr., San Diego
Secretary, Anna J. Janett, 525 Kalmia, San Diego
Santa Barbara:
President, Mrs. Rhoda Roberts, Ventura Co. Hosp., Ventura
Secretary, Mary Isham, 1734 State St., Santa Barbara
Southern California:
President, Mrs. Roxie Morris, 9616 San Gabriel St., South Gate
Secretary, Mrs. Mary Dodge, 11225 Ivy Pl., Los Angeles 34

Colorado

President, Katharine Chilcote, V.A. Hosp., Ft. Logan
Secretary, Virginia Vickers, 756 Colorado Blvd., Denver

Connecticut

President, Herbert Jones, Hosp. for Chronic Illness, Rocky Hill
Secretary, Victoria Preitner, Hosp. for Chronic Illness, Rocky Hill

Delaware

President, Jean Wiley, 42 Hurst Rd., Deerhurst, Wilmington
Acting Secretary, Christine Lutz, Delaware Curative Workshop, 16th and Washington Sts., Wilmington

District of Columbia

President, Dorothy E. Voss, 107 Thor Dr., Rte. 1, Falls Church, Va.
Secretary, Dorothy Barnhart, 918 18 St., N.W., Washington

Florida

President, Mrs. Audrey C. Lester, 300 Royal Palm Way, Palm Beach
Secretary, Mrs. John Hedrick, 2986 S.W. First St., Miami 35

Georgia

President, Mrs. Hazel Stephens, Warm Springs Found., Warm Springs
Secretary, Genevieve Collins, Warm Springs Found., Warm Springs

Idaho

President, Christine K. Kline, 1702 Jefferson St., Boise
Secretary, Anna Sweeley, 1719 N. 18 St., Boise

Illinois

President, Jean Roland, 2301 W. Farwell Ave., Chicago
Secretary, Beatrice Bozarth, 4206 N. Winchester Ave., Chicago 18

Indiana

President, Mrs. Patience Stom, 4625 Sunset Ave., Indianapolis
Secretary, Nelda Johnson, 3001 N. New Jersey St., Crossroads Rehab. Center, Indianapolis
Northern Indiana:
President, J. Nelson Mosher, 918 Bellevue Ave., South Bend
Secretary, Adeline Emmerling, South Bend Clinic, 120 N. Lafayette Blvd., South Bend

Iowa

President, Charlotte Vasey, 210 E. Davenport St., Iowa City
Secretary, Barbara Lee, Westlawn, Box 191, Iowa City

Kansas

President, Minerva W. Cheshire, 426 S. Green, Wichita 7
Secretary, Mrs. Fern Parker, 1002 N. Ridgewood, Wichita

Kentucky

President, Eloise Draper, 2511 Concord Dr., Louisville 13
Secretary, Mrs. Caroline Randolph, 146 Fenley Ave., Louisville

Louisiana

President, Audrey Ullman, Foundation Hosp., Jefferson Highway, New Orleans 21
Secretary, Merton Miller, 6001 Mandeville St., New Orleans

Maine

President, Lois M. Burns, Hyde Mem'l Home, Bath
Secretary, Rowena Walden, Me. Gen'l Hosp., Portland

Maryland

President, Dorothy Boynton, 219 Murdock Rd., Baltimore 12
Secretary, Mary F. McDowell, 1923 Taylor Ave., Baltimore 14

Massachusetts

President, Virginia Greenwood, 23 Oxford Rd., Newton Center
Secretary, Ruth Langley, 331 N. Main St., Randolph

Michigan

President, Mabel Holton, W. A. Foote Mem'l Hosp., Jackson
Secretary, Marjory W. Ketchum, 917 Leahy St., Muskegon Hgts.

Minnesota

President, Hazelle M. Erickson, 3416 Fifth Ave., S., Minneapolis
Secretary, Annette Larson, 177 Leavenworth St., St. Paul 11
Southern Minnesota:
President, Esther Swartz, 15 12 Ave., N.W., Rochester
Secretary, Mrs. Irene Koshire, 1015 West Center St., Rochester